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Notes and News.

Frank Smith Diamonds. The local secretary writes: "We are directed by the local committee of this company to advise you that the results for the month of August, from intermittent washings, were 992 carats from 26,726 loads. It has been decided to temporarily suspend washing operations to-morrow (Saturday) in order to carry out the alterations to the machinery as recommended by the managing director. The plant has been inspected by an independent engineer, who confirms that the alterations can be effected within a fortnight, and should result in a great improvement in the yield."

* * * *

Weekly Wages. The excellent paper read by Mr. Charles Hewitt before the Accountants' Society last Saturday night is, unfortunately, too lengthy to be reprinted in our columns. It is understood, however, that the paper is being printed separately in full, and those interested can obtain copies at the "Industrial Leader" Office. We hope to refer in greater detail to the paper in our next issue.

* * * *

Crown Diamonds. Excellent reports come from the Crown Diamond mine, and washing is proceeding smoothly. An average of 11½ per 100 loads has been officially returned, and the manager has recommended that the capacity of the plant be doubled. The plant started in August, and the payability of the mine is now regarded as proved. The successful demonstration of the value of the property—in the face of many sceptics—is, of course, due to the abandonment of the old plant and methods and the adoption of a system run on commonsense lines supplemented by what is regarded as the most modern and up-to-date plant in this country. The success of the Crown mine is a good augury for other diamond properties similarly circumstanced. A wire received from the property yesterday stated that a 22 carat stone of very fine quality had been found.

* * * *

Fight Against Malaria. At the annual meeting last week of the South African Anti-Malarial Association, a resolution was passed expressing the opinion that little real material progress in the direction of the eradication of malaria can be hoped for, so long as a considerable portion of the native population remains infected, and urging the Government to consider the desirability of instituting an organised effort to destroy the chief sources of infection by the wholesale anti-malaria treatment of natives in infected areas. Another resolution was to the effect that investigation designed to ascertain the varieties, distribution and movements of the disease-carrying mosquitoes should be undertaken by the Government, as a preliminary to organised measures for the destruction of mosquitoes and mosquito larvæ in infected areas. A third resolution urged that quinine and mosquito proof netting should be freed from Customs duty.

* * * *

Finding Employment for Tailings. The problem of the sand dumps, despite extensive underground filling, is still a big one on the Rand. In America a use for residues has been found in certain districts. Millions of tons of "chats" or mill tailing is produced annually in the Flat River and Joplin lead and zinc districts. According to statistics collected by the Missouri Geological Survey, more than 2,700,000 tons have been utilized during the past year in the building of good roads, in concrete construction, and as railroad ballast. The material, as obtained from the mills, is in ideal condition for these purposes, the principal cost to the consumer being that of transportation. The mining companies sell the chats at $1 per car, or less than 10c. per ton. The total tonnage used in 1912 shows an increase of more than [illegible] cent. over 1911. Although the production of tailing is approximately equal in south-east and south-west Missouri, only about 25 per cent. of the tonnage utilized is obtained from the south-east mines. Missouri to-day makes use of a greater tonnage of chats than any other State.

* * * *

Amsterdam Diamond Federation Reports Bad Year.

Reuter hears from Amsterdam that the annual report of the Federation of Diamond Workers says the year was the worst since the foundation of the federation, the principal causes therefore being the war in the Balkans, the Presidential election in the United States, and the situation in Mexico. The report also complains of the Premier Mine having given " a sort of monopoly " to five merchants. The number of unemployed had been 15½ per cent.

* * * *

Central Minings.

The profits of the Central Mining and Investment Corporation for the six months ended the 30th June are estimated at £215,000, before deduction of income tax. In view of the continued depreciation in South African mining shares, which has been temporarily accentuated by the recent labour troubles on the Rand, the directors consider it inadvisable to declare an interim dividend, and have decided to defer consideration thereof till the accounts for the current financial year are made up.

* * * *

Recreation Halls.

The investigation by the three Mining Commissioners of the Witwatersrand in conjunction with the Receiver of Revenue, Johannesburg, into the question of the selling to mine employees of a large number of lines, such as cigarette-holders, scissors, pipes, knives, soap, bootlaces, purses, thermos flasks, etc., resulted in placing this matter upon a satisfactory basis. The result achieved is largely due to the willing co-operation on the part of the mine managements. It was settled that the conduct or management of these recreation halls shall be strictly upon club lines, and confined to the following articles for consumption on the premises:—(a) Non-intoxicating beverages; (b) tobaccos, cigarettes, and matches; (c) sweets; (d) bovril, tea, coffee, cocoa, biscuits, and cake. It is thought that as long as these places are conducted purely on club lines, there will be no objection, as it is undoubtedly in the interests of the miners themselves to have such places where they can meet and read good literature, newspapers, etc., and to curtail such simple facilities would be unreasonable in the extreme.

* * * *

Government and the " Small Man."

The Government is now prepared to aid the " small man " with cheap assays on the following terms:—(1) Samples must be addressed to the Government Mining Engineer, New Law Court Buildings, Johannesburg, and will be accepted for transmission free of cost to that official by (a) the Mining Commissioner of any district; (b) the Station Master at any railway station of the Union South African Railways; (c) the Postmaster at any post office, provided that the packet does not exceed 3 lb. in weight, that the samples are well wrapped up to prevent injury to other mail matter, and that the cover is plainly marked O.H.M.S. (2) The prescribed fee must be forwarded simultaneously with the dispatch of the samples, and must be accompanied by (a) the full name and address of sender; (b) the number and date of prospecting permit or licence, if any; (c) an accurate description of the locality, such as name and number of farm, from which each sample has been taken. (3) The applicant must state what metal or constituent he wishes to have determined in respect of each sample. (4) Each sample must bear a distinctive number. (5) Each sample should weigh between 1 lb. and 3 lb., if possible. All information in connection with samples will be treated by the department as confidential. Schedule of prices: Fine gold, 5s.; gold and silver, 6s.; silver, 5s.; copper, 5s.; tin, 7s. 6d.; lead or zinc, 6s.; lime, 5s.; magnesia, 6s.; iron, 5s.; arsenic, antimony, nickel, cobalt, manganese, bismuth, or mercury, 7s. 6d.; chromium, tungsten, vanadium, or molybdenum, 10s.; platinum or any of the allied metals, 12s. 6d.; complete analysis of coal with evaporative power, 17s. 6d.; coal, evaporative power (by Thompson's method), 2s. 6d.; coal, evaporative power (by Mahler Bomb), 5s.; complete analysis of coke, 17s. 6d.; graphite, 12s. 6d.; complete qualitative analysis, 21s.; complete quantitative analysis, £2 10s.; experimental cyanide treatment of ore, giving gradings, original value, residues, percentage of extraction, lime and cyanide consumption, also if ore is refractory or otherwise (per sample), £3 3s.; if three or more samples are submitted at the same time (per sample), £2 10s. The above special tariff is not available for parties who, in the opinion of the Minister of Mines, are financially able to make their own arrangements. The identification of minerals by the Geological Survey, Pretoria, free of charge, will be continued as heretofore under the conditions of Government Notice No. 349 of 1908, dated the 3rd April, 1908.

* * * *

Improved Position at the Sheba.

In a recent issue we directed attention to the much improved position of the Sheba Company in the Barberton district, one of the oldest and best known gold mines in South Africa. We now note with interest a Government report, made by the Barberton Mining Commissioner, Mr. Hirst. In the course of this Mr. Hirst writes:—" Some three to four years ago one expected any month to hear that the Sheba Mine was closing down. To-day the mine is making a handsome profit, and has apparently a good life in front of it. At one time mining was spread over a considerable area, probably in five or six different places, but when Mr. White took over the management he concentrated his attention to the Zwartkopje block of claims, and he has discovered there what is undoubtedly a promising mine, yielding just now an average of 16 dwts. From July, 1909, when the grade was 6·2 dwts., it has fluctuated between that figure and 21·9 dwts., and in December, 1912, it was 17·05 dwts. The working costs in July, 1909, were 33s. 9d., and in December, 1912, 24s. 10d. per ton, and it is estimated that there are now about 100,000 tons of good grade ore in sight."

* * * *

Record Shaft Sinking at " Knights."

The record of the Witwatersrand vertical shaft, sunk under the supervision and direction of Mr. E. Roberts (mine overseer), calls for special attention, says Mr. C. E. Hutton, the Germiston Inspector of Mines, in his annual report. This shaft was sunk to its present and ultimate depth of over 2,200 feet by hammer work without an accident due to a missfire having been drilled into. All holes were charged with primers at the bottom thereof, and in most cases had detonators and fuses in duplicate. The fuse used was Bickford Smith's best sinking fuse, with No. 8 detonators. The junction of detonators and fuse is painted with P.B. rubber paint to keep out the moisture, and water tamping was used. This better class fuse does not spit through its outer cover to the same extent as the cheaper fuse. The advantages of this method could be put down as follows:—(1) The primers have a double chance of exploding owing to duplication of fuses, etc. (2) There is less chance of explosives being forced into cracks and thus leaving a dangerous socket. (3) All fuses are lit by a number of lighters in a short time, and when the first shot exploded the fire point in the other fuses would be below the collar of their separate holes, with the result that the possibility of a missfire through a " cut out " is considerably lessened. In water, inexperienced miners will bunch fuses together either by twisting them together, turning them round a short lagging pole, or putting their ends through holes drilled in a small plank; when the first holes go off flying stones strike the above arrangements, causing the holes not yet exploded to have their fuses with detonators jerked out, and thus missfires result. Experienced miners will float each fuse separately on a small bit of wood, the fuse being in a niche at the side of the wood.

The one disadvantage of this system is the possible generation of CO, NO, or NO_2, but this is minimized by using special fuse and water tamping.

* * * *

New Land Settlement Scheme. We understand that the big land settlement scheme to be managed by Mr. W. J. Palmer, formerly Director of Agriculture in the O.F.S., will be launched next week. Full particulars will appear in our next issue. The scheme seems already assured of success.

* * * *

Welgevonden Tin Mines. This mine, on one of the African Farms properties, being the farm Welgevonden in the district of Waterberg, some twelve miles to the west of Naboomspruit, has now reached the productive stage. On Saturday, the 30th ult., the construction engineer, Mr. Jorgenson, was able to hand over the battery and extraction plant to the manager, Mr. E. B. Day, in full running order, and our correspondent informs us that the whole installation is a great credit to the engineers who planned and put it into execution. Especially the Wilfley tables attract attention and seem to act as splendid separators for the extraction of the tin concentrates. Ore of high quality was being put through, and no doubt the whole plant will give a splendid account of itself when the first returns are made. On the construction party leaving, an unofficial function had been arranged for the celebration of the actual starting of the battery, and besides the staff of the mine some twenty visitors were present. Mr. Day, in very happy terms expressed his appreciation of Mr. Jorgenson's work, alluding to the great initiative shown by him in making use of a great deal of second-hand plant to the very greatest advantage, so much so that the spick and span appearance of the whole installation did not leave even as much as a suspicion that any part of it was not of the newest and most modern make. Mr. Jorgenson suitably replied and referred particularly to the great importance of the whole-hearted support of the men on the construction work in such out-of-the-way places and which support he had fully had to his great gratification. Mr. Vogts asked all present to also think of the splendid pioneering spirit displayed by Mr. J. J. Jameson and the others responsible for the developing of the mine. What was only a few years back a howling wilderness had been transformed into a busy little oasis in the wide expanse of barren veld; he would especially congratulate that old Transvaal pioneer, Mr. Day, for having once more conducted a mining venture towards the successful issue, and last but not least he would ask them to think of the devotion of the ladies who had joined to undergo the first hardships of the budding mining camp. Mr. Day's health was then formally proposed by Mr. Jorgenson and that of the ladies coupled with the name of Mrs. Day by Mr. Vogts. Mr. Kennedy, the popular mine secretary, spoke on behalf of the staff and fittingly pointed out the necessity of standing together in their common efforts to make the Welgevonden Mine the success it ought to be, while they were entitled in their turn to look to it to give them their home and livelihood. The enthusiastic singing of "Auld Lang Syne" brought the pleasant function to a close.

* * * *

The City Deep's New Shaft. The new circular shaft at the City Deep has now been sunk to a depth of 160 feet. This shaft, like that being sunk at the Crown Mines and the pit recently completed at the New Modderfontein, is 18 feet in diameter, and it is expected it will have to be sunk to a depth of 2,300 feet to effect connection with the existing underground workings. It is hoped that sinking operations will proceed at the rate of about 120 feet per month. The object of this shaft, as at the Crown Mines, is to improve underground working conditions, and it is intended to ensure an adequate system of ventilation for the whole mine throughout its life. The total cost of the shaft will be approximately £70,000, which will be considerably more than covered by the proceeds from the sale of 15 claims to the adjacent City and Suburban Company.

TOPICS OF THE WEEK.

HEALTH AND MINE NATIVES.

THE prominence given to the discussion of white labour unrest on the mines has overshadowed the subject of native labour mortality, which has been engaging earnest attention in several quarters lately. For instance, Dr. Watkins Pitchford, director of the South African Institute of Medical Research, in a report to the Witwatersrand Native Labour Association, gives details of the progress of construction of the buildings and results so far achieved in providing immunising vaccine against pneumonia. Since the beginning of the present year 116,970 doses of prophylactic pneumococcil vaccine have been prepared and distributed to medical officers of the W.N.L.A., Premier Mine, and gold mines of the Rand; and 193 doses of bacterial vaccine for the treatment of cases of pneumonia had been issued to various mines. The preventive efficacy of pneumococcil vaccine has not yet been fully established, he says; it is, however, worthy of notice that a few weeks ago pneumonia had become so rare in the mine hospitals that the directors experienced some little difficulty in finding half a dozen cases of the disease. This fact could doubtless be largely explained by the check given to the recruiting of mine labourers, but the Director adds that he is hopeful that the very large scale to which inoculation has been resorted to may be found to have had some decided influence. The important question of the degree of protection conferred by pneumonia vaccine is being very carefully investigated. Before Dr. Parry Morgan left Johannesburg in December last he inoculated some 6,224 tropical recruits, and they set aside a further 1,545 uninoculated recruits as "controls." The records of this experiment are being carefully kept, and the Director trusts the investigation will throw light on several questions connected with pneumonia on the Rand other than the mere degree of protection which follows inoculation.

Again, Mr. Samuel Evans, in an important paper read before the Unionist Party Club, makes another contribution to the subject, which we reprint in full elsewhere in this issue. Read in conjunction with his remarks at the annual meeting of the Anti-Malaria Association, it may be seen Mr. Evans regards the Panama lessons as of the first importance for the Rand. Captain Madge, the indefatigable Chairman of the Anti-Malaria Association, at the annual meeting of that body last week, also dwelt upon the probable visit in the near future to South Africa of Colonel Gorgas, the eminent sanitarian of the United States, who was responsible for the conversion of the formerly pestilential Panama Canal zone into as healthy a district as almost any in North America. Apart from a remarkable reduction in the death rate from other causes, the result of his work reduced the death rate from malaria among those employed in the canal zone from 8·39 per 1,000 in 1906 to ·27 per 1,000 in 1912. Colonel Gorgas has accepted, subject to the consent of his Government, an invitation from the Transvaal Chamber of Mines to conduct an inquiry into the hygienic conditions of the Witwatersrand mines with a view to the possible reduction of the incidence of pneumonia and other diseases. It is to be hoped that the opportunity of conferring with an expert of such world-wide repute as Colonel Gorgas as to the best way of dealing with the malarial question in South Africa will be taken full advantage of by the Government. Captain Madge hoped also that they would be able to persuade Colonel Gorgas to lecture on the subject under the auspices of the Association. The views of Colonel Gorgas on the future of the white races in Tropical and Sub-Tropical countries are of particular interest to us in South Africa. Addressing the Graduating Class at the Cornell Medical College in 1907, he stated that, if yellow fever and malaria were eliminated, as they could be, life in the Tropics for the white races would be more healthy than in the temperate zones, and that gradually, within the next two or three centuries, Tropical countries, which offered a much greater return for man's labour than did the temperate zones, will be peopled by the white races and become the centres of wealth, population and civilisation. The Union of South Africa included within its boundaries vast temperate zones with an unequalled climate; but it also included extensive Tropical and Sub-Tropical areas. Captain Madge added that it was to assist in improving the health conditions of these latter areas for their present inhabitants, and to hasten the day when they would be filled by a robust and enterprising white population, that were the reasons for the existence of the Association. On the same occasion Mr. Samuel Evans pointed out that in the Union they had very extensive areas of malarious districts and they certainly could be made more valuable judging by what had been done in the Panama. One of the reasons raised against doing anything had been the expense. Colonel Gorgas estimated the cost in the Panama of the work necessary not only to eliminate mosquitoes but other insects which carried disease at ·8 of a or ·4 of a penny per head of the population per day. That was not a very high expense. It seemed to Mr. Evans that the Government had not done so far what it ought to do to try and make the low-lying areas of South Africa healthy and habitable to a white population. In the Panama they started to get rid of malaria and yellow fever; but their greatest success had been with disease that concerned the temperate zones, with pneumonia and typhoid. The pneumonia death rate was reduced from three or four per thousand to point something per thousand—quite a low figure. They had done the same with typhoid. Those are two diseases which concern the people in temperate zones. These views and opinions, though open to the criticism that they come from laymen, will nevertheless commend themselves as eminently sound and well-informed commonsense. It is possible that the beneficial results of the present health campaign may prove more far-reaching for good, than even its most enthusiastic promoters now expect.

BRITISH CONSULAR SERVICE AND THE UNION.

A CONSIDERABLE step forward in Imperial trade relations with this country is marked by the new Consular announcement made from Pretoria this week. It is notified for general information that arrangements have been made for the extension to the Union of South Africa of the scheme for the establishment of more intimate relations between the British Consular Service and the Dominion of Canada. This scheme is summarised below, and should be read as if " South Africa " were substituted for " Canada " throughout. (1) The Department of Trade and Commerce of Canada will be furnished by His Majesty's Government with any reasonable number of copies of all trade reports from the Far East and from any district which the Dominion Government may specify, as soon as they are published. (2) Any Canadian firms will be at liberty to apply direct to any of His Majesty's Consuls for information as to possibilities of the sale of Canadian products, the method under which business is conducted, and the best means of getting into touch with markets. They will receive all possible assistance in this matter, subject to the condition laid down in the report of the Canadian Minister of Trade and Commerce, that the Consuls are primarily commissioned to serve the trade of the United Kingdom. The Canadian Department of Trade and Commerce will be supplied from time to time with lists of His Majesty's Consular representatives in the Far East and in other districts in which they are interested. (3) Canadian Trade Commissioners will be at liberty to apply to His Majesty's Consuls for advice and assistance. (4) Should the Canadian Government desire that office room should be afforded in British Consulates for Canadian commercial representatives, no objection would be raised in principle. (5) Each case would be considered on its own merits, and be a matter of arrangement between His Majesty's Government and Canada, dependent on the needs and convenience of the Consular office. When such accommodation is granted it is understood that the Consular office assumes no responsibility for the direction or work of the Canadian representative. The arrangement, whereby office room for Canadian commerce representatives at His Majesty's Consulates will be provided is intended to be merely a tentative one, applying to a very restricted number of ports, and special instructions will be given on the subject in each individual case. Sir Edward Grey considers, however, that the members of the Service should be made acquainted with the scheme which has been drawn up in consultation with the Dominion Government.

THE STRIKE PROBLEM.

THE report by the British Industrial Council on the inquiry into industrial agreements is rather inconclusive. The reference to Sir George Askwith and his colleagues presented the two following questions:—(1) What is the best method of securing the due fulfilment of industrial agreements; and (2) how far such agreements should be enforced throughout a particular trade or district. For the arguments employed we must refer our readers to the report itself, but the important point is that the Council decide against the employment of any form of compulsion, or any interference with the internal organisation of any association, whether of workmen or employers. It is strongly urged, indeed, with " the maximum degree of emphasis," that where a breach of an agreement has been committed, no assistance, financial or otherwise, should be given to the persons " in breach " by any of the other members of the associations connected with the agreement. But, on the other hand, it is held that this should not be made legally obligatory, and thus matters are left very much where they were before. The whole tenour of the report, in fact, is that the only remedy is to rely upon moral influence, and while the second question is answered in the affirmative, again no pressure other than moral suasion is suggested. Perhaps the most significant feature is the memorandum attached to the signature of certain members of the Council to the effect that an inquiry into the effects of the British Trades Disputes Act and the provision of protection would be desirable. Of course, if that were ruled out from the consideration of the Council, the conclusions arrived at become inevitable, for one cannot employ compulsion to a body standing in the position toward the English law that trade unions now occupy. But after recent experiences, both oversea and in South Africa, the meek reliance shown upon purely moral influence suggests futility.

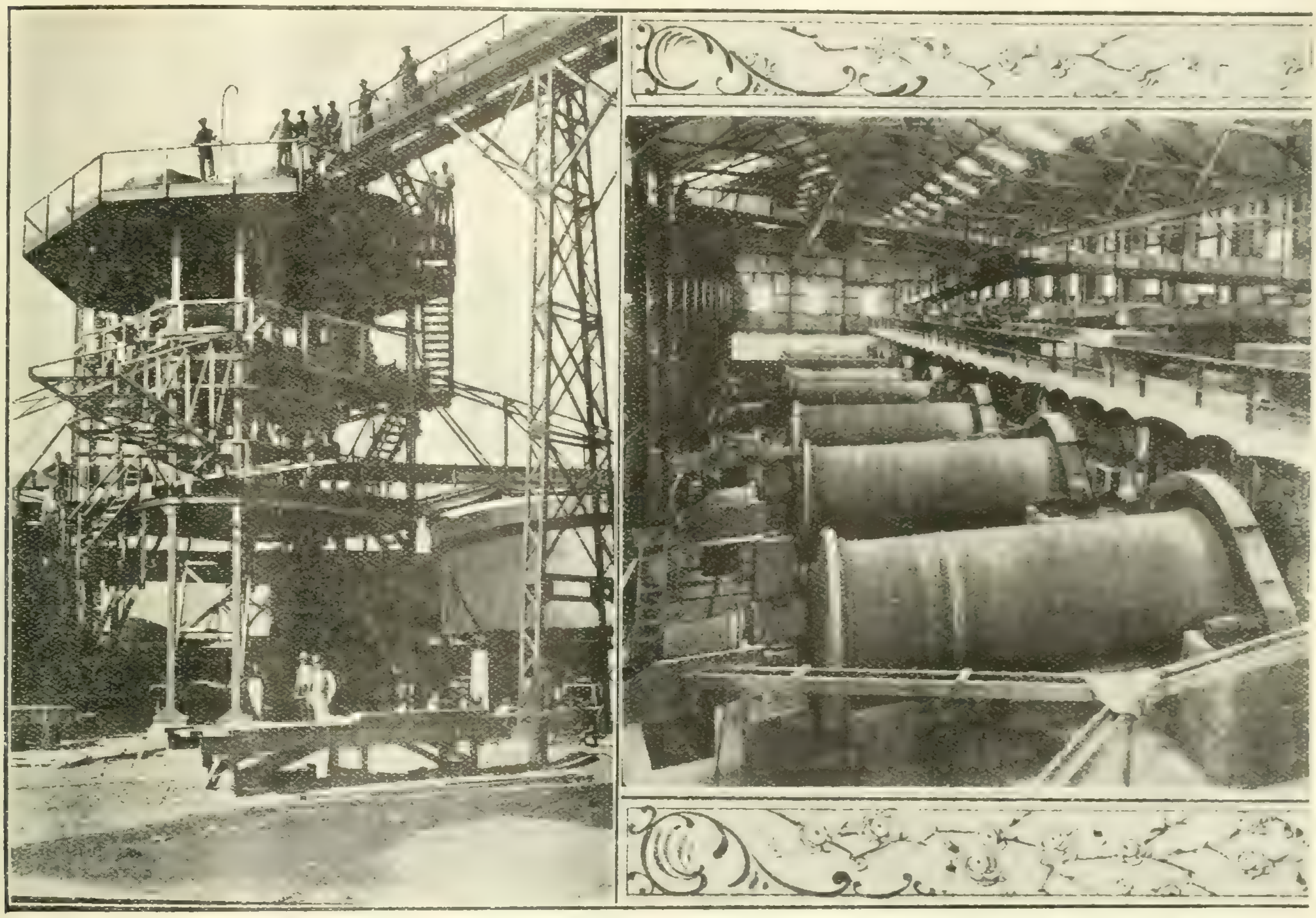
Mr. Honnold and Quarterly Reports.

The question of policy in connection with frequency of publication of Rand mine reports is dealt with by Mr. W. L. Honnold in an article appearing in the last issue to hand of the *Mining and Scientific Press*, and published by arrangement with the *Michigan College of Mines Quarterly*. We had something to say on the subject a few weeks ago, and it is here of interest to note the views of the local head of the Consolidated Mines Selection group. Mr. Honnold writes: " All that is claimed for the monthly and quarterly reports as now published is that they provide confirmation or modification of certain comparative data, the dividend significance of which has been previously foreshadowed by precedent and prophecy with as much certainty as would probably result from a more ambitious attempt. Taken in this light, much can be said in their favour. It should, perhaps, be added that some critics have advocated going to the other extreme and publishing no interim reports whatever, their argument being that, apart from the fact that at best such publications may prove misleading in some degree, there is the practical consideration that they may lead to a somewhat costly struggle for regularity in matters essentially irregular."

EXCELLENT POSITION OF THE VAN RYN DEEP.

Two Photos of the New Plant—The Mine of the Moment.

THE two accompanying photographs of portions of the Van Ryn Deep plant have not been previously published, and although we have on several occasions in the past reproduced a number of illustrations of this property, we deem these well worthy of insertion. In the first place, they show two interesting portions of the fine new equipment of this mine, and secondly, the Van Ryn Deep is the mine of the moment. Development, we learn, continues to disclose highly satisfactory results, and it is reported that the mine is to-day looking as well as ever, and in this connection it should be remembered the proposition has all along proved itself to be better than the average in point of values. Interest in this further East Rand deep level is further quickened by the fact that in a few days' time the first output of the company will be declared. At the present from 60 to 65 stamps are dropping, and the entire equipment is running smoothly. The output to be announced on Wednesday next will be in respect of the August operations and a portion of July, but as is only to be expected in connection with the starting up of a new plant, there will be considerable absorption of gold by the plates, and a further amount will be in circulation. Milling operations were just commencing when the strike occurred, and the formal dropping of stamps did not take place until the middle of July. The Van Ryn Deep, like many other propositions on the Witwatersrand at the present time, is considerably hampered by scarcity of native labour. One of the two photographs here reproduced shows a portion of the classification plant of the company. The cones are ordinary classifying cones without the Caldecott diaphragm. The other illustration depicts the row of tube mills. The somewhat curious appearance of the outer shells of the mills is due to the fact that the photograph was taken when the mills were running.



TWO VIEWS OF THE VAN RYN DEEP PLANT

A German Appreciation of American Metallurgy.

Dr. Heberlein, who recently visited a number of U.S.A. and Mexican lead, zinc and copper works, as a result of his observations read an interesting paper at the last meeting of the Association of German Metal Smelters. He was particularly struck by the fact that the smelters are, as yet, unprovided with coking installations, and that the coking works have not yet adopted efficient means for the recovery of by-products. He highly commends the small electric locomotives able to proceed by the sharpest curves [illegible] the narrowest corners of the works. He illustrated by photographs the working of American [illegible] pumps for liquid lead, and he particularly mentioned the [illegible] sheds, where ores frozen during transport in railway trucks are thawed in order to facilitate unloading. He praises the high value placed in America upon well-equipped works' laboratories, as well as the careful composition and ingenious handling of the charges. He produced pictures of up-to-date copper, zinc and lead works, and described some of the processes now in vogue. After alluding to attempts made to neutralise the noxious effects of sulphurous acid and the recovery of [illegible] salts from phonolithes, he shortly discussed American labour efficiency, which, notwithstanding much higher wages, he does not consider superior to the German standard. As a result of all he had observed [illegible] his belief that the Americans are in advance of Europe only in the metallurgy of copper and in the treatment of poor lead ores.

THE LOT OF THE RAND MINE WORKER.

A Special Enquiry into the Conditions of Life and Work along the Reef.

IV. ARE UNDERGROUND HEALTH CONDITIONS IMPROVING? FURTHER INTERVIEWS WITH THE MEN.

This week we continue an account of the interviews a representative of this paper had last week with men in the Village Deep Mine, with a view to eliciting information from actual working miners as to health conditions in the mines. It was felt that expressions of opinion by the men themselves would be far more valuable than whole pages of quotations from evidence before Commissions and other authoritative documents with which this journal has dealt very fully in the past, and which could not, therefore, be expected to throw any new light on the all-important subjects of underground health conditions and the lot of the Rand miner generally both above and below ground. It may be remembered that in our last week's article it was recorded that our interviewees expressed the opinion that conditions in the Village Deep were exceptionally good. Other men our representative questioned held to a similar view, and on being asked what mine he considered as exceptionally bad one man advised our representative to institute enquiries in the City Deep. As we recognised the force of the men's argument that a proper perspective of the subject could not be obtained by investigating conditions in what is admittedly an exceedingly well ventilated and well watered mine, we sought permission to go down the City Deep mine and there make similar enquiries to those instituted in the Village Deep. Our request was readily sanctioned, and this week our representative has been busy interviewing men in what is described as the worst mine on the Rand. Before recording the expressions of opinion gained in the City Deep mine, we will, as promised last week, conclude an account of our interviews in the Village Deep.

A Contractor's Views.

Mr. P., a machine drill contractor in the Village Deep, was questioned:

" Do you think conditions have improved underground in this mine in regard to dust allaying and ventilation generally?" we asked.

" Yes, they have improved greatly in the last year or two. A few years ago this was a bad mine to work in, but to-day it is difficult to find fault. The air is good and there is plenty of water; in fact, I think there is too much water. Abundant water all over the mine and sprays and jets are all very well for the new hands, but I am an old hand at mining on the Rand, and I don't think these sprays are going to do us old hands much good."

" Why is that?" we queried.

" Well, I've been mining for a good few years, and my lungs are not too strong. I can't afford to take many chances with pneumonia. My doctor tells me if I contracted pneumonia it would finish me off. I come up out of a comparatively warm stope into a drive and get a shower bath from one of those sprays, and there are many others like me who can't stand the chilling effects."

" It's a case, then, of choosing between two evils—phthisis or pneumonia?"

" Yes."

" But wouldn't you rather have plenty of water than a dry mine and the probability of phthisis?"

" Oh, yes."

" How long do you think I could work here without contracting phthisis, assuming I am in good health and condition?" our representative next asked.

" Conditions for a man starting mining to-day are quite all right," Mr. P. continued. " You ought to last for at least twenty years, that is, if you took care of yourself both below and above ground. Mind you, there's a great deal in the way a man lives at surface. Take the single man who has finished his work. What is there for him to do? He can't stay in his lonely room. He generally ends up by going in town and leads a fast and expensive life."

" Don't the reading rooms and recreation halls tend to keep the men to a sane and healthy life?"

" No; I don't think they do."

" Why not?"

" I can't tell you, but they don't. I reckon I should be dead by now if I hadn't got married. Nowadays I lead a very different sort of life to what I used to. I don't live on the mine; I live out at Turffontein, and I drive to my work every morning and drive home in the afternoon. The fresh air going to and from my work does me a world of good. When I get home I do a bit of gardening, and after supper I have a couple of glasses of beer and wind up the gramophone. Yes, a great deal depends on the way a man lives out of the mine."

" What do you think of a scheme which enables miners to acquire their own homes on a company's property?"

" I think it should be a very good thing for the men."

" How do you think conditions on the Rand compare with conditions on mining fields in other parts of the world?"

" Well, there is one thing about the Rand which must be borne in mind, and that is, one isn't called upon to work so hard here as in other parts of the world. In fact, a man who knows his job does practically no hard manual work at all on the Rand. If you see a man coming out of a stope or a drive, or a winze, or a raise all covered with grease and dirt you can be sure he isn't earning big money. Supervising—that's all it is on the Rand, and the man who is a good supervisor and has a sound knowledge of mining, and who also treats his boys well and handles them tactfully, he's the man who knocks out a large cheque."

An Australian's Statements.

Mr. D., an Australian miner of wide experience, who has worked in Kalgurli, Broken Hill, New Zealand, and other camps, was next approached.

" Do you think health conditions on the mines have improved, Mr. D.?" we asked.

" Undoubtedly," he responded. " I haven't been in this country long, but I have observed a distinct change for the better in the last eighteen months or so. Conditions in this mine are quite good to-day, but mind you, this is an exceptional property. You ought to go to a mine like the City Deep, where conditions are bad, and make enquiries there."

" How do you think general conditions on the Rand in regard to health, pay, and cost of living compare with Australian conditions?" we queried.

" Well, here the pay is higher, but the cost of living is also higher, and I personally think a man who is earning a pound a day or less is better off in Australia than on the Rand. There are greater opportunities for sport at a moderate cost there than there are here, and life generally is more pleasant."

" Is there any miners' phthisis in Australia?"

" Yes, there is dust in the Kalgurli mines, but the trouble was taken in hand a long time ago, and years back conditions in Kalgurli mines in regard to ventilation were as good as they are on the Rand to-day."

" If I took to mining in this mine to-day, do you think I could work for more than seven years and not suffer in health?"

" Yes, if you took care of yourself."

" For how much longer."

" I can't say; perhaps twenty years."

Interviews in the City Deep.

At the City Deep our representative was agreeably surprised to find the ventilation much better than he had been led to expect. Generally speaking, the temperature in the workings was warmer than in the Village Deep, and in a few ends it was notably hot. In these latter workings, however, only a little time is required and connection will be effected with other workings, when conditions will be much improved. Throughout the mine there will, too, be a great betterment in regard to ventilation when the new circular central shaft (which is being sunk for ventilation purposes) has effected further connection between surface and the mine workings. The mine is equipped with a fan, and in the Government Mining Engineer's report the conditions are described as follows:—Depth, 2,137-3,360 feet; temperature, 70 degrees to 84 degrees. Brass nozzle about 18 in. long, giving jet of ½ in. for dry holes. Sprays are not extensively used on account of molassine.*

Our representative found the mine well equipped with sprays, ventilating doors, and water pipes.

From a Canadian's Point of View.

The first man we interrogated in the City Deep was Mr. H——, a Canadian.

"Yes, I think you could work down here for a good number of years without contracting phthisis," he said, in reply to our query. "If you contracted it after a year or two of work I should say it would be largely your own fault."

"How does the Rand compare with Canadian mining fields in so far as the miner's lot generally is concerned?" we asked.

"Men get higher wages here than in Canada, but it is more difficult to save money. And if a man has saved a little money here, and is 'laid off' for any time, it doesn't last long. In Canada a man with a hundred dollars can afford to take things easy for a bit and live quite well, but here a hundred dollars will be used up in a very short time. Men are sometimes discharged by a mine official unjustly. The manager may see the injustice of the discharge, but he doesn't care to reverse the judgment of a subordinate official."

Mr. H—— told us he had experience of electric blasting in Canada, and he thought it might be adopted to advantage on the Witwatersrand, although he admitted it might have a tendency to endanger the hanging wall, which is treacherous, and in many places insecure in the City Deep.

A Cornishman's Opinions.

A Cornishman who had worked in American mines was next interviewed. In reply to questions, he stated that he considered underground conditions had improved considerably on the Rand during the past year or two.

"The mines here," he continued, "are not nearly so hot as the Montana properties I have worked in. Generally speaking, I regard the Rand as the finest mining fields in the world. The pay is higher than elsewhere, and one has not to do so much hard work. One has to work much harder in America than in the Transvaal."

"Do you think the average miner on the Rand to-day is as good a man as the average Rand miner of a few years ago?"

"No, he isn't. Most of the good miners have died of phthisis or have been frightened away by the prospect of contracting the disease. Very few miners are coming to the Rand to-day. They prefer to go to America."

(To be continued.)

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* Sprays are now more extensively employed.

WILLOUGHBY'S CONSOLIDATED COMPANY.

Some Optimistic Statements—The Eileen Alannah and Connemara Equipments.

Lt.-Col. Weston Jarvis and Sir John Willoughby each had something encouraging to say as to the affairs and future of the Willoughby's Consolidated Company at the annual meeting of that company, held in London in mail week. *Inter alia*, the chairman remarked:

With regard to some of the subsidiary companies, the Eileen Alannah (70 claims) was floated in 1911. Every care is being taken to avoid any mistake in the treatment of the ore. Mr. Marriott finds the ore capable of simple treatment, and with that simple treatment he finds by his experiments that he can get an extraction of upwards of 90 per cent. The plant to be erected is to have a capacity of 5,000 tons per month. The development of that mine is now five years ahead of a mill of that capacity. The ore is of high grade and the development extends to the eighth level. This Company owns approximately five-eighths interest directly, and, with indirect interests through its subsidiaries, 75 per cent. of that property, and we look forward to a large revenue in the near future from this source. By the middle of next year we ought to be crushing on the Eileen Alannah Mine. With regard to the Queen's, a property comprising 67 claims, since the flotation of that Company to May 31st last, they had crushed 39,203 tons of a value of £96,030. Considerable development has been proceeding simultaneously with that crushing. The ore reserves have been doubled since that property was floated, and are now 50,000 tons. By the end of this year we anticipate 80,000 tons of ore reserves—that is to say, five years ahead of the capacity of the present plant. You would like to know, I daresay, the exact position of the Connemara. It consists of 96 claims. We have nearly 200,000 tons of ore already developed of a value of about £300,000, and it is estimated by the engineers that a further 50,000 tons is already in sight. Satisfactory values were recently exposed in the sulphide zone at the third level, and there are very great possibilities of large bodies of pay ore on the northern extension of the property. The Engineers have recommended the erection of a reduction plant with a capacity of 6,000 tons per month, and Mr. Marriott is at this moment engaged in experiments to decide the process. I have received the following cablegram from Col. Heyman, the Company's Managing Director in Bulawayo, dated August 6th, which gives you in a few words the progress made to date: "Notwithstanding the temporary depression estimates of revenue from all sources for the first half of the year have been exceeded. Demand for land continues active, with prices considerably in advance of last year. Have effected sales of farms from 10s. to 20s. per acre, and further considerable acreage still under option for purchase. All our cattle in splendid condition and free from disease. Bulawayo water-works revenue for first half of year shows considerable increase on previous six months, and the water supply for this year is assured. Eiffel Blue: Improvement in the mine still continues. Queen's: Walter Currie recommends increased capacity of plant to 2,500 tons per month; metallurgist now experimenting for more efficient method of treatment. Connemara: Metallurgist's experiments will be carried out during August to determine on treatment for the best extraction. Native labour plentiful.—(Signed) Heyman." We think that the position of this Company compares more than favourably with that of any similar undertaking whose reports have recently been published, and we maintain that this satisfactory state of things has only been accomplished by continuous spade-work, and that the satisfactory nature of our report has only been brought about by the sound past policy of the Directors.

Crown Diamonds.

During the month of August 18,409 loads of blue ground from the mine were washed, yielding 2,044 carats (average 11·1 carats per 100 loads). The machinery and plant is working well.

Vaal River Diamonds.

During August, 481 diggers working on the estate of the New Vaal River Diamond and Exploration Company, Ltd., produced 5,107¾ carats of diamonds, which realised [illegible] per

SOME LESSONS FROM PANAMA CANAL.

Mr. Samuel Evans Describes the Work and its Bearing on Rand Problems.

THE following is the complete text of the lecture delivered by Mr. Samuel Evans at the Unionist Party Club on Wednesday night :

"I was on the Isthmus of Panama in December and January last. I was there a month, so you must not expect me to know everything about the Canal. The main reason for my visit was this : the Americans are employing 12,000 Europeans and about 38,000 negroes : the Canal zone used to be considered one of the unhealthiest spots in the whole world ; it is in the Tropics, nearer the Equator than any part of our Indian Empire excepting Ceylon. The mortality under the French companies, and in the first years of the American occupation, was very large. Since 1908 the health conditions among the workers on the Canal zone has been as good as is the case on similar works in the healthiest parts of Europe. Now, I wanted to know what had been done on the Canal zone to safeguard health, which has not been done on these mines. That was why I went to the Panama, and that is also why so many of the slides which I am going to show you have a bearing directly or indirectly on sanitation and cognate subjects.

COLONEL GORGAS'S SUCCESS.

"I have published in various forms my views of the health problem on the Canal and on the Rand, and consequently I do not propose to enlarge upon that point to-night. Briefly, the conclusion I have arrived at is this : that the extraordinary success of Colonel Gorgas's system of sanitation is due to the fact that he has made it almost impossible for rats and insects to spread disease. I should say that the results have probably surprised Colonel Gorgas himself, as the most marked reduction in the mortality rates, both as regards the negroes and the Europeans, has been in the case of pneumonia, which is not ordinarily considered as being an insect-borne disease. In a paper read before the South African Association for the Advancement of Science at Lourenco Marques last July, I referred to the striking similarity between Colonel Gorgas's system for saving human life and dipping, which is doing so much to save animal life in South Africa. In both cases insects are prevented from spreading disease, and in both cases the results have been of a more far-reaching character than any one had ever anticipated. Even in Johannesburg it is probable that Colonel Gorgas's system of sanitation would save a large number of lives which are at present lost through the action of unsuspected insects ; and certainly its adoption would make the low-lying areas of South Africa healthy for Europeans. However, that is too vast a subject for me to enlarge upon to-night.

HISTORY OF PANAMA.

"There are just a few other points to which I propose to refer quite briefly before I begin to direct your attention to the slides. It is believed that the first European to see the Pacific Ocean was the Spanish navigator Balboa—the real 'Stout Cortez' of Keats's sonnet. He crossed the Isthmus of Panama from the Atlantic to the Pacific in September, 1513, exactly four hundred years ago. He crossed at a point slightly east of the site of the present Canal. He, like Columbus, was trying to find a western passage from Europe to Cathay. During the four centuries that have elapsed since the days of Balboa the possibility of cutting a canal through the Isthmus and joining the two oceans has been constantly kept in view. A proposal to dig this canal where it has been dug to-day was submitted to the Government of Spain in 1529, but the Emperor Charles the Fifth made it known that any person suggesting interference with God's work to such an extent would have his head cut off. That damped the ardour of canal builders for a time. Notwithstanding the many proposals advanced, nothing serious was attempted until Count de Lesseps took the matter in hand some thirty-four years ago. The first French company was working on a large scale from 1881 to 1889, when it failed. The second French company continued the work on a small scale up to 1903, during most of the time doing only just enough work to keep the concession alive. In many ways the French prepared the ground for the Americans. The manner in which the finances of the first company were handled left a great deal to be desired. On the other hand, the work of the scientific men, engineers and doctors, in charge of operations on the Isthmus, was most creditable and has been of the greatest value to their successors on the job. Both Colonel Goethals and Colonel Gorgas speak in the highest terms of the superb intelligence, determination and courage displayed by the French engineers and the French doctors. Speaking at Los Angeles in June, 1911, Colonel Gorgas said : "I think it due to the French to say that we could not have done a bit better than they if we had known no more of the cause of these Tropical diseases than they did.' It was largely yellow fever and malaria which brought disaster on the enterprise of the French on the Panama. The United States bought out the interests of the French company in the Canal in 1904. The first three years (1904-05-06) were chiefly devoted to the sanitation of the Isthmus, assembling the working force, providing quarters for the workers, and other measures of a preparatory character.

A GOVERNMENT WORK.

"Of the features connected with the Canal, perhaps the most remarkable is the fact that it is a Government job throughout ; it is being constructed by the United States Government under the direction of military officers. I am not an engineer, but as far as it is possible for a layman to judge, the work is being executed efficiently, expeditiously, cheaply and without any kind of graft. It is not likely that the building of the Panama Canal will add a single name to the roll of American millionaires.

"A visitor to the Panama is afforded every facility to see everything there is to see. He may not immediately realise it, but if he inquires he will find that on the Canal zone he is more completely dependent on the Government than is the case in any other country. He can, if he chooses, sail from New York to Colon in a Government ship. Once on the Canal zone, however, and if he wants the best of everything, he has no choice but to hand himself over body and soul to the United States Government. He must travel on Government railways ; he must live in Government hotels ; he must patronise Government laundries, and if he happens to be an employe of the Canal Commission, he would be a fool if he did not purchase all his requirements in Government shops. If he is of a religious turn of mind he can attend a Government church and listen to a sermon by a clergyman whose stipend is paid by the Isthmian Canal Commission. The fact is the Government of the United States is the universal provider on the Panama Canal. I hope, however, you will not conclude from what I have said that the United States have established on the Canal zone a working model of the socialist state. The only thing the conditions on the Canal really prove as regards the government of men is the correctness of the old saying that the best Government is that of a wise despot.

THE DOMINANT PERSONALITY.

"As far as the Canal zone is concerned, Colonel Goethals, Chief Engineer and Chairman of the Isthmian Canal Commission, wields an autocratic power which Napoleon or Bismarck might have envied. He issues decrees which he modestly calls circulars, and which are more effective on the Canal zone than a ukase of the Czar in Russia. They are not numerous, they are usually short and very much to the point. I copied one in full. Here it is : 'Culebra, C.Z., August 4th, 1911. Circular No. 400.—The use of profane or abusive language by foremen or others in authority, when addressing subordinates, will not be tolerated.—Geo. W. Goethals, Chairman and Chief Engineer.' Some journalistic wag urged President Taft to remind Colonel Goethals that he had been sent to the Panama to construct a canal and not for the purpose of manufacturing commandants in competition with Moses.

TREATMENT OF SUBORDINATES.

"Colonel Goethals having secured very extensive powers from the Government of the United States, is almost equally lavish in delegating powers to his subordinates ; with the result that every foreman on the job on the Canal zone is also an autocrat and exercises great powers as regards the engagement and dismissal of men and in order directions. And no foreman need fear interference from above so long as he acts honestly and according to his judgment. Colonel Goethals holds a court at his office at Culebra every Sunday morning, and all who have grievances can call and see him personally. Complainants, however, must be in a position to prove corruption or some real abuse before the Colonel will consent to go into the matter further. The man who is simply a back-biter has a pretty bad time at these interviews. In an address to the National Geographical Society of the United States of America, delivered in February, 1911, Colonel Goethals said : 'Generally speaking, employes are selected on account of their special fitness for the work in hand, and are then unhampered in their methods of securing definite results, thus bringing out to its fullest extent individual effort and brain power. As a consequence each man has a personal interest in the work and seems imbued with the idea that the success of the enterprise depends on him. The spirit of enthusiasm and of loyalty among the canal workers strikes forcibly every one who visits the Isthmus, and convinces the doubting that the canal will be built.' The other great man on the Canal, Colonel Gorgas, who is in charge of the Sanitary Department, is also a firm believer in encouraging the man on the job to use his own discretion and his own judgment. In his instructions to his inspectors Colonel Gorgas writes : 'It is the policy of this office to give District Sanitary Inspectors wide latitude in the administration of their districts and the management of all affairs pertaining thereto. They will at all times have the support and full backing of this office in the faithful performance of their duties. Their recommendations and suggestions are sought, and will receive careful consideration.' I have referred rather fully to this policy of trusting subordinates, because I believe it has a most important bearing on the striking success which has been achieved by Colonels Goethals and Gorgas in their respective departments.

REASONS FOR THE UNDERTAKING.

"Why are the Americans building the Canal? I should answer : (1) To strengthen the efficiency and striking power of their Navy ; and (2) to facilitate and improve the commercial relations of their Atlantic and Pacific States. There can be no doubt that in time the effect of the Canal on the commerce of the world will be very great. The distances saved by the Canal are : New York to San Francisco, 7,873 miles ; New Orleans to San Francisco, 8,868 miles ; New York to Adelaide, 1,746 miles ; New York to Melbourne, 2,770 miles ; New York to Sydney, 3,932 miles ; Liverpool to British Columbia, 6,000 miles. Australia and New Zealand are now 1,000 miles nearer Liverpool than New York. The Canal will bring them nearer to New York than to Liverpool by 2,500 miles. What the effect of this on the British Empire will be I do not propose to discuss to-night."

HYDRAULIC STOWING IN PRACTICE.

In a paper read by M. Victor Viannay, before the Société de l'Industries Minérale, on the wear of conduits for hydraulic stowage (*Bull.* May, 1913, p. 481), the following conclusions are given:—The maximum wear is obtained when using non-argillaceous refuse in particles (colliery dirt, broken slag, etc.), and the minimum wear with very fine materials, such as clay, washery refuse, etc. An admixture of a certain proportion of the latter materials will diminish considerably the wearing effect of the former. As an internal lining, hard steel or tempered iron is to be preferred. Large diameters and frequent bends should be avoided, as these increase the wear. The dilution with water should not be excessive, that giving the minimum wear being less than 1 part of water to 1 part of refuse. In conclusion, a table is given showing the results obtained in a number of installations, the inverse of the coefficient of wear, which is denoted by $\frac{1}{u}$, representing the cubical volume of refuse necessary to cause 1 mm. of wear per decimetre of the perimeter of the conduit.

Mines.	Horizontal conduits.		Flushing materials used.			
	Diameter.	Construction.	Composition.	Dimensions of holes in hopper. screen.	Apparent speed	Value of $\frac{1}{u}$
	Mm.			Mm.	M.	
Cleophasgr.	187	Rolled iron	Argillaceous sand	100	—	11,300
Gothardsch.	187	Do.	Do.	100	- -	11,300
Kœnigin-Luisegr.	187	Do.	Do.	100	4·50	28,200
Delbrucksch.	187	Do.	Sand	65	-	11,300
Myslowitzgr.	187	Do.	Do.	70	3·0	7,450
Czeladz	125	Do.	Argillaceous sand	70	1·0	5,900
Paulinesch.	187	Do.	25 per cent. clay, 20 per cent. loam 25 per cent. slag, 30 per cent. coaldust	70		13,600
Friedensgr...	196	Do.	35 per cent. sand and loam, 65 per cent. broken blast furnace slag	30	2·75	1,450
Maxgr.	182	Do.	12 per cent. argillaceous sand 88 per cent. broken stone from mine	90	—	3,340
Cons. Giesche-Steink	150	Cast iron	12 per cent. argillaceous sand 20 per cent. zinc slag	80		1,960
Maxgr.	182	Do.	(See above).	90	—	2,030
Concordiagr.	225	Do.	Argillaceous sand	—	1·50	7,300
Do.	150	Do.	Do.	-	3·0	14,400
Do.	150	Do.	25 per cent. sand, 10 per cent. loam, 25 per cent. crushed rock, 30 per cent. granulated slag, 10 per cent. ashes.	30	- -	7,400
Czeladz	178	Rolled iron	88 per cent. argillaceous sand 0·6 per cent. ashes, 11·4 per cent. crushed rock.	70	1·0	7,470
Myslowitz	187	Steel	Sand	70	3·0	6,050
Do.	147	Reinforced with oak	Do.	70	4·50	3,600
Kœnigin Luisegr...	150	Porcelain	Argillaceous sand	100	—	2,125
Friedensgr..	165	Do.	51 per cent. crushed slag, 20 per cent. crushed rock from mine, 29 per cent. argillaceous sand.	30	4·50	1,780
Do.	165	Do.	61 per cent. crushed rock from mine, 39 per cent crushed blast furnace slag.	30		400
Do.	150	Reinforced with iron	19·5 per cent. crushed rock from mine, 31·5 per cent. sand and loam, 49 per cent. broken slag.	30	—	3,000

Generally, where sand is used for flushing, the dilution is in the proportion of 1 to $2\frac{1}{2}$ parts of water to 1 of refuse. In the two installations at the Czeladz mine the dilution is respectively 4 : and 2 : 1. In the Kœnigin-Luisegr installation the sand contain silicas, and according to the experience of the Deutsche-Kaiser mine the coefficient u is practically nil when fine materials are employed.

Blaauwbosch Diamonds.

The directors of Blaauwbosch Diamonds, Ltd., have declared a dividend of 20 per cent.

Roberts Victor Diamonds.

The following was the result of the working of the Roberts Victor Diamond Mine for the month of August, 1913:—17,847 loads washed, yielding $4,898\frac{3}{4}$ carats.

Diamond Fillip.

BUSINESS SHOWING REMARKABLE REVIVAL.

The *Financial News* states that there is no doubt the diamond business is reviving remarkably, and although uncertainty still exists regarding the American tariff, it seems fairly evident that the approaching autumn will be a fine one for business.

Kolmanskop Diamonds.

The output of diamonds from this company's property at Luderitzbucht for the month of August was 8,176 carats.

City and Suburban.

This company's returns for August are as follows:—Tons milled, 23,960; gold recovered, 10,372 fine ozs.; profit, £16,649.

Mines Department Exams.

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine-Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible. E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, corner of Eloff and Pritchard Streets, Box 2061. Johannesburg

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Electric Blasting.

To the Editor, *South African Mining Journal.*

Sir,—In your article, "The Lot of the Rand Mine Worker," contained in your last issue, one of the men interviewed by your representative says, in speaking of electric blasting, "You must not forget that were electric blasting adopted throughout the mine there would be a greater number of shots going off almost together than under the present system. . . . . . I think that the tendency would be to weaken the hanging and cause a greater number of accidents through falls of ground. There would be a greater shock or concussion at blasting time underground, and that might have a bad effect on the roof." This is one of the common instances of the ability of most people to foresee difficulties, and their inability to find solutions of the simplest kind. There is no necessary reason whatever why any more shots should go off "almost simultaneously" with electric time fuses than with the system now in vogue. The current required to fire electric fuses is very small, and is on for only a fraction of a second. There is no difficulty whatever in providing a shaft cable containing small separate conductors for every level in the mine. There is no difficulty, either as regards arrangements or expense, in firing every working place in turn from the surface, and so producing not more, but less, simultaneous concussion than is probably produced each day in the week on every mine on the Rand. The difficulty raised in this interview is largely imaginary, and would probably be overcome, as far as it exists, by having separate conductors for two or three alternate sets of levels. There is no practical limit to the sub-division of the circuit should it be necessary.—Yours, etc.,

E. J. MOYNIHAN.

National Diamonds.

To the Editor, *South African Mining Journal.*

Sir,—I am a small shareholder in this company, and would like to ask you the following questions as to the latest fiasco on the share market of this company:—(a) Why one director has suddenly left the board? (b) Why another one has suddenly left for Europe? (c) What is the registered returns of diamonds for the past six months and the number of loads treated? (d) Is the machinery a failure? (e) Is the result a failure? (f) How many times the managers have been changed in the past six months? (g) Who are the present directors? All mines that are floated into a public company of a country are part and parcel of the potentiality of prosperity of that country. This country has a distinct interest in the success of its diamond industry, and if the National Diamond Company is a failure I think there should be a Governmental enquiry similar to the Midas and the E.R.P.M. I should very much like to know your opinion on this mine, and so would a good many more sorrowing shareholders.—Yours, etc.,

SCOTLAND.

Johannesburg, 28th August, 1913.

Natal Mine Prosecution.

The Inspector of Mines, Natal, notifies for general information that the following prosecutions have been brought by the Mines Department in Natal:—On the 12th August Mr. James Scobbie, manager of the South African Collieries, was charged before the Magistrate, Dundee, with having contravened Regulation 118 of the Mines and Works Regulations, 1911, in that he had failed to keep his underground plan correct to within three months from the 20th May. Mr. Scobbie pleaded guilty, but stated that the mistake had occurred through an oversight. He was fined £3. On the same day Mr. H. Nicholls, secretary of the Durban Navigation Collieries, Dannhauser, was charged before the Magistrate, Newcastle, with having contravened Article 139 of the same regulations, by failing to furnish the Government Mining Engineer on or before 31st March, with a return showing the capital invested, assets and liabilities, and other details pertaining thereto as at the 31st December preceding. The accused pleaded guilty, and was fined £5.

The net earnings of Victoria Falls and Transvaal Power Co., Ltd., for the quarter ended June 30, 1913, amounted to £121,561. The figure represents an average monthly increase of over £5,000 compared with the previous quarter's earnings. As a matter of fact this is a net increase in earnings at the rate of £60,000 per annum.

The directors of the Standard Bank of South Africa, Ltd., have declared a dividend for the half-year ending June 30 of 10 per cent., and a bonus of 4 per cent.; £25,000 has been written off investments and £15,000 off premises; £10,000 has been allocated to reserve and £10,000 to pensions; £50,000 has been carried forward.

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Rhodesian Section.

LATEST MINING NEWS.

The July Output—Flora Claims—Shamva Development—The Eldorado—Railway Traffic—The Pickstone—Rhodesia Chamber of Mines—Tati Concessions.

During the past month 27 tons of ore were crushed from the Flora claims, situated about four miles from the Fred mine, Filabusi, resulting in a recovery of 141 ozs. of fine gold, valued at £595. This mine was recently acquired by Mr. E. E. Beecroft, for a very moderate sum. The original owners of the property were the " B.P. Syndicate," who, however, abandoned the claims some time ago. It is believed that the length of the " strike " is approximately 700 feet, and development work is now in hand with the object of proving this. In the meantime, and as a consequence of this work, only old dump rock can be treated, and moderate returns are to be looked for.

* * * *

A cable was despatched last week to the London office of the Shamva Mines, Ltd., to the effect that the length of the pay shoot on the 3rd level, which was given in the company's annual report as 410 feet, has now been extended to 510 feet, averaging 5·5 dwts.

* * * *

The position of affairs at the Eldorado property was summed up in a few words by the chairman at the recent meeting of shareholders, as follows: " Should the main reef shoot continue its present width and values, and the parallel reef remain for the most part valueless, we shall have to continue crushing with a reduced number of stamps, but might still work to a large profit from each level. On the other hand, should the parallel reef regain the values that it showed on the upper levels, and should the main reef produce the same tonnage and values on the levels below the 10th level as in those above, or should both of these conditions obtain, there is no reason why we should not return to the same position and distribute the same dividends as in the past; but this is all contingent on developments in the lower levels, of which we have little or no indications at present."

* * * *

The following table shows the approximate receipts of the Rhodesian railway system—The Beira and Mashonaland Railways, the Loganmunda and Eldorado branches, the Rhodesia Railways (Southern and Northern extensions, including branches), the Mashonaland Railway (Kalomo to Broken Hill), and the Blinkwater and Mazoe branches—for the month of June and the eleven preceding months:—

	B. & M.	L. & E.	R. R.	M. R.	B. B.	Mazoe B.
1912.	£	£	£	£	£	£
July ..	38,305	1,826	84,203	6,343	659	579
August	46,014	2,157	88,529	8,093	761	934
September .	48,014	2,354	79,372	7,034	649	1,199
October	47,531	1,500	97,012	11,332	772	536
November .	49,963	1,635	99,317	13,907	592	562
December ...	48,500	1,605	81,764	9,587	618	540
1913.						
January ...	56,527	1,813	79,459	8,583	791	517
February ...	43,192	1,860	72,315	7,970	812	342
March . .	47,217	2,499	79,372	8,456	736	950
April . .	57,794	1,443	77,861	8,226	892	2,967
May	66,058	2,334	80,062	9,939	1,190	4,377
June	60,385	2,357	81,542	11,118	1,395	3,099

* * * *

The following information is taken from the Pickstone manager's report to the directors for the month of July: Development footage for month, 256 feet. The Chilian mill and sands portion of the new cyanide plant started running during the month, and are giving very satisfactory results. Ore is now being milled from the Pickstone West mine. 2,844 tons of ore were treated during the month, yielding 1,194·16 ozs. fine gold, value £5,020 9s. 10d. The working profit for the month was approximately £3,387 12s. 5d.

* * * *

The annual meeting of the Forbes Rhodesia Syndicate, Ltd., was held at the offices, 2 London Wall Buildings, London, E.C., on Wednesday in mail week, Mr. G. Forbes, J.P., presiding. The report and accounts covering the last year's operations of the syndicate were adopted.

* * * *

THE total value of Southern Rhodesia's mineral output for the month of July, details of which are published in another section of this issue, has been officially declared at £270,812, as compared with £254,426 in June. The figures for the two months read as under:

	June.	*July.*
Gold	£240,303	£249,302
Silver	1,358	1,280
Lead . .	498	467
Chrome iron ...	5,679	12,163
Coal (sales) ...	6,314	7,171
Diamonds	274	429
Totals .	£254,426	£270,812

* * * *

The gold output for July, showing as it does an increase of 2,276 ozs. in weight, and £9,000 in value as compared with June, is the highest total yet recorded in respect of any one month's operations, although in March last 61,274 ozs. were declared owing to the inclusion of 4,764 ozs. of reserve gold from the Globe and Phoenix mine. The value of the output declared for July brings the total value for the first seven months of the current year £100,000 in advance of that for the corresponding seven months of 1912. A table, showing the value of the monthly and annual gold outputs since January of 1911, together with the value of the other minerals recovered, is appended

Month	1911.	1912	1913
January	£207,904	£214,918	£220,776
February	203,055	209,743	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211,413	234,407	243,452
June	215,346	226,867	240,303
July ...	237,517	240,514	249,302
August	243,712	239,077	
September ...	225,777	230,573	
October	218,862	230,072	
November ...	214,040	225,957	—
December ...	217,026	218,661	—
Total gold ...	£2,647,895	£2,707,367	£1,661,472
Other minerals.	242,864	257,230	130,727
Total value ...	£2,890,759	£2,964,597	£1,792,199

* * * *

The report of the Executive Committee of the Rhodesia Chamber of Mines for the month of July contains the following: *Finance.*—Payments during the month amounted to £221 18s. 4d. The balance to credit of current account on 31st July was £123 1s. 2d. Fixed deposits now total £600. *Native Labour.*—The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of May and June, 1913

	May, 1913.	June, 1913.
Local	13,238	13,800
Portuguese territory ...	5,966	5,849
N.W. Rhodesia	2,885	3,126
N.E. Rhodesia	5,064	4,551
Nyasaland ...	5,716	5,442
Other sources	816	842
	33,685	33,610

The number of natives employed in June shows a decrease of 3,785 when compared with the corresponding month of 1912. *Herbage Preservation Ordinance.*—The Government have drawn attention to the promulgation of the Herbage Preservation Ordinance, under Section 11 of which a prospector is obliged to give notice to the owner of occupied land of his intention to prospect. It is intended to endorse prospecting licences with this clause. *Railway Rates.*—The question of the impending reduction on timber, cement, galvanised iron, and mining stores of a rough and undamageable character has been dealt with by a sub-committee of your executive. *General Business.*—Amongst other matters which have received the attention of your committee during the month are:—Miners' Phthisis Ordinance; Mines' Hospital Accommodation; Sea Freight on Bullion, etc.

* * * *

At a meeting of the Tati Concessions Company, held in London the other day, the chairman stated of the New Zealand property:—I knew that, personally, I had said nothing of the kind. At the most I said we hoped the returns from the New Zealand mine would leave us a nice profit. That mine is now under the management of the board of Durham Prospecting Co. It is quite true that, for the time being, operations are suspended, but that is in order to put up a cyanide plant, to effectively treat the ore which was found to be refractory. We are advised that there are hundreds of tons which have been mined and stoped. A lot of it was passed through the mill, but it proved to be refractory, but now a cyanide plant is being put up, and the whole matter is in the hands of the manager. You must wait and see the result of the cyanide treatment, and I cannot say anything further.

Sakalava Oil Fields.

A circular has been issued to shareholders in the Sakalava Madagascar Proprietary Oil Fields, Ltd., dated 1st September, 1913, in the course of which it is stated Mons. David Levat, whose services were recently requisitioned by the Sakalava Madagascar Proprietary Oil Fields, Limited, to report upon the property, make a geological survey, and locate boring sites, left Paris in April last and reached Madagascar early in May. His completed report, dated July 23rd, 1913, is now to hand. This report covers 84 pages, and it is impossible to publish the whole document, sketches and map in extenso. Mons. Levat is of opinion that a portion of the property, approximately 400,000 acres in extent, comprises some very valuable oil ground. He states that the formation is of Triassic age, composed chiefly of thick alternating beds of oil-bearing sandstones, clay and marls in the form of Anticlines and Monoclines which dip at angles favourable to large accumulations of oil, which he definitely states he believes will prove payable. In this area Mons. Levat has selected six blocks of ground, each approximately 19,000 acres in extent, which are considered by him to be sufficiently valuable to be floated as distinct and separate oil fields, one of them immediately should such procedure be thought advisable. The most important anticlines located by Mons. Levat (and on each of which he has located boring sites) are the following:—Maroboalo Oil Fields, 14,750 acres; Ampanihy River Fields, 18,000 acres; Folokara (Sakalava) Oil Fields, 18,750 acres; Ambohitralika Oil Fields, 13,000 acres; Amposimbe Oil Fields, 25,000 acres; Manambolo River Oil Fields, 25,000 acres. Reporting on " The Maroboalo Oil Fields " (this anticline being a new and important discovery), Mons. Levat states, *inter alia*: " *Seepages.*—Both flanks are marked by abundant seepages of more or less fluid Bitumen oozing from a big bank of coarse sandstone about 15 feet high. This flows slowly all the year round. *Dykes.*—No dykes are found on this anticline which offer any danger of dividing the anticline. The dip of both flanks seems to be symmetrical and runs 2 degrees to 5 degrees at the different places we were able to take our measures. The distance between the seepages oozing on both flanks (more than 1½ miles apart) and the small incline of those flanks give every possibility of getting at this point a large deposit of oil. *Conclusions.*—I consider the Maroboalo Anticline as one of the safest to be drilled on in the Betsiriry Valley. It is disposed in such a manner that in getting the oil at depth, a big pool can be expected to be found. I recommend it in first line for the small drill at 1,500 feet." Reporting on the " Ampanihy River Oil Fields," Mons. Levat states, *inter alia*: " *Seepages.*—The eastern flank shows abundant seepages of semi liquid bitumen at a distance of 700 yards from the apex. Both flanks show oil bearing rock in abundance. *Dykes.*—No important dykes or eruptive rocks are in the vicinity of this anticline. *Flanks.*—The eastern flank presents in the vicinity of the apex more dip than the western. This is rather exceptional in the Bitsiriry, where the eastern dips are so rare, and is very favourable to the possible accumulating of the oil in the lower strata of the formation. *Conclusions.*—I consider the Ampanihy River anticline as one of the best properties of the Sakalava Madagascar Proprietary Oil Fields Company. According to its position far from the Bongolava Limit, it possesses a great thickness of oil bearing strata, and thus is well prepared to receive a powerful drill, capable of reaching a depth of 3,000 feet. The dip of the visible flanks gives every probability of getting large pools of oil in the various levels of oil bearing sandstones which will be struck by the drill. I recommend that place in first line for big drill on its arrival in the Colony."

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RHODESIA'S MINERAL OUTPUT FOR JULY.

July Figures—A Record Gold Return.

The following is the official return, as supplied by the Rhodesia Chamber of Mines (Incorporated) of the mineral output for the month of July, 1913:—

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
BULAWAYO DISTRICT—				
Agincourt (H. L. Maidwell)	5 1P	258	193.72	814
Alexandra (J. Stewart)...	2	156	52.10	220
Alice and Atlas (Est. R. Barkley deceased)	10	870	90.28	379
Do. (tailings)	—	650	64.48	271
Bangali (Arbery & Hicks) clean up	–	–	9.52	10
Big Ben (W. E. Hunt)	4	204	116.53	489
Do. (tailings)	—	132	59.10	248
Blanket (Forbes Rhod. Synd., Ltd.)	15	180	41.63	175
Blue (S. H. Burns) tailings...		800	11.84	176
Burton (S. H. Burns) tailings		800	11.84	176
Bushtick Mines, Ltd.	24 3T	6668	264.45	1110
Do. (tailings)	—	3564	641.12	2693
Do. (slimes)...	—	3046	330.88	1390
"C" (D. & C. Synd.)	10 1C	1913	149.65	629
Do. (tailings)	—	1578	185.65	780
Do. (slimes)...	—	335	73.99	311
Carry (S. & G. Syndicate)	1 H	220	431.35	1812
Champion H. & 1 S (R. Aserman) ...	5	653	102.64	431
Do. (tailings)	—	323	51.83	218
Chromate (Arbery & Hicks)	5	540	71.19	299
Do. (tailings)	—	400	12.63	53
Clean Up (H. W. Bearcroft)	5	460	154.90	650
Colleen Bawn (Colleen Bawn Syndicate, Limited)	6 1P	391	35.42	149
Cottage (Cranleigh Synd.)	2	152	50.50	212
Do. (tailings)	—	320	49.80	209
Cross (T. W. Angus) tailings	—	300	27.47	115
Dam (W. H. Robinson)	2	12	13.14	55
Do. (tailings)	—	155	6.65	28
Eagle A. (Macdonald & Co.)	5	610	294.22	1236
Do. (tailings)		272	60.91	256
Elumba A (Copper & Bosomworth)...	5	550	94.61	397
Farvic (H. S. Henderson)	5	494	241.96	1016
Do. (tailings) ...	—	285	24.45	103
Flora (E. E. Beecroft)	5	27	141.63	595
Fred (Transvaal & Rhod. Est. Ltd.)	5	649	447.34	1879
Do. (tailings)...	—	770	121.46	510
Glen A (A. Fraser)	3	114	13.57	57
Godwin B. (Barrett & Stacey)	5	112	36.54	153
Golden Butterfly (Wheeler, Davis & Rintoul)	5	585	144.72	608
Halley's Comet (Fynn & Barnes)	5	1	2.37	10
Imani (E. Rochfort)	2	200	53.66	225
I.X.L. (G. Jose) tailings	—	600	38.18	160
Jem (A. Rivington)...	5	30	35.05	147
Jumpers (Newton, McCay & Early)	5	280	230.64	969
Do. (tailings)	—	390	98.34	413
Kameel (New Rhod. M., Ltd.)	5	610	217.33	913
Koba (Koba Syndicate) clean up ...	—	—	14.49	61
Do. (tailings)...	—	750	26.16	110
Limes (D. Vincent)	5	140	10.48	44
Lone Hand (Armstrong, Furber & Alexander)	5	522	195.50	821
Lonely Reef G.M. Co., Ltd.	20 3T	5810	1832.34	7696
Do. (slimes)	—	5810	3217.37	13513
Mamba (J. M. Stone) tailings	—	200	22.96	96
Matabele Queen's Co., Ltd....	10	1730	500.06	2100
Do. (tailings)...	—	1730	574.36	2412
Do. (slimes)	—	633	61.40	258
Matabele 3 (R. M. Nairn)	10	1262	565.29	2374
Do. (tailings)		840	165.65	696
Minnie's Luck A (C. M. Reid)	5	344	61.71	259
Nelly (F. D. Roscoe)	2H	767	475.42	1998
Do. (tailings)	—	300	100.63	422
New Clifton G.M. & Dev. Co., Ltd. (slimes)	—	500	31.47	132
New Eclipse (J. R. Stewart)...	5	800	184.06	773
Do. (tailings)	—	270	16.83	71
New Insimbi (P. G. Challen)	5	261	121.09	509
Old Nic (Chart. & Gen. E. & F. Co., Limited)	15 4P	1942	671.44	2820
Do. (tailings)	—	1112	261.43	[illegible]
Orphan (J. H. Hoare)	5	10	6.99	29
Penzance (Penzance Tribute Synd.)...	2	55	21.76	91
Do. (tailings)	—	200	31.96	134
Peggy (E. H. Hambridge)	7	45	7.72	32
Planet (Triggs & Huntley)	5	804	197.17	828
Princess (C. A. Abbott)	2	125	32.66	137
Richmond (A. D. Hall)	5	223	90.78	381
Do. (tailings)		180	21.99	92
Riversdale (Bruhns & Schwarz)	5	284	74.78	314
Roman (E. V. Campbell)...	5	125	38.03	160
Spanker (E. Cooper) pannings	—	1	11.98	50
Susanna Mines, Ltd.	8	901	435.01	1827
Do. (tailings)	—	602	69.89	294
Do. (slimes)	—	476	49.32	207
Teutonic (MacDonald & Borston) ...	5	732	374.83	1574
Tuff Nut (King's Synd.)	5	520	192.51	809
Do. (tailings) ...	—	300	75.84	319
Do. (slimes)	—	220		
Umvoti (Henderson & Toshack)... ...	2	165	31.91	134
Up to date (Cumings & Berry)	3	360	63.16	265
Do. (tailings)	—	264	38.09	160
Worthless (Forward (R.) G.M. Co., Limited)	5	27	5.43	23
Xmas (M. Westerberg) ...	2	16	9.30	39
Bulawayo District Total...			16,625.07	69,824
GWELO DISTRICT—				
Ardpatrick (C. Maleham	3	344	169.31	711
Bee (Scott, Hodgson & Nalty)	2	325	83.61	351
Broad Arrow (F. Ewing)	10	320	33.08	139
Do (tailings)	—	175	9.69	41
Cinderella (P. Burt)	1E	360	58.18	244
Collingwood (Pini & Wearing)	Ball mill	2	103.34	434
Csardas (Wolfshall Synd.)	10	535	447.91	1861
Do. tailings, ...	—	390	71.25	299
Do. (slimes)	—	145	14.21	60
Elsie (T. Pedlow)	5	60	21.10	89
Gaika G.M. Co., Ltd.	5 1C	3231	1105.25	4642
Do. (tailings)	—	1680	142.72	600
Do. (slimes)	—	1250	104.35	438
Glenrosa No. 1 (H. G. McIntosh) ...	2	161	121.43	510
Do. (tailings)	—	104	26.02	109
Globe & Phoenix G.M. Co., Ltd. ...	40 10P	6585	7762.90	32604
Do. (concentrates)...	—	309	880.66	3699
Do. (tailings)	—	2334	1197.28	5029
Do. (slimes)	–	2626	530.53	2228
Gretna Green (M. L. Price)	5	146	115.09	483
Invulnerable (A. E. West)	5	130	28.18	118
Kings (P. S. Warden) tailings	—	442	99.29	417
Moonie River (Yellow Jacket Synd.)	5	300	79.25	333
Moss (James & Morrisby)	2	350	191.78	818
New Dunraven G.M., Ltd.	5	900	111.72	469
Do. (tailings)	—	720	55.22	232
New Moss (Robinson & Bennett) ...	2	211	117.21	492
North Bonsor (Cornish Syndicate) ...	5	478	72.58	305
Do. (tailings)	—	490	94.67	398
Paradox (Bolt & Franks)	5	30	29.81	125
Pompei (Pharos Syndicate)	2	162	23.40	98
Pretty Polly (New Rhod. Reduction Co., Ltd.) tailings	—	560	30.19	127
Red Hill Dev. Synd., Ltd.	1C	2693	107.71	453
Do. (tailings)	—	1128	115.55	485
Robb (F. J. Nalty) tailings		300	69.53	292
Sceptre and Troneador (R. and W. Syndicate)	1C	806	85.86	361
Do. (tailings)	—	270	71.29	299
Selukwe Columbia G.M., Ltd.	1C 3P	3170	1008.05	4234
Do. (concentrates)	—	180	214.65	902
Do. (tailings)	—	2193	344.38	1446
Do. (slimes)	—	931	137.47	577
Do. (other sources)	—	–	8.50	36
Shamrock (Crampin & Masters)... ...	10	1004	105.26	442
South Bonsor (Ideal Synd.)	10	700	88.06	370
Do. (tailings)	–	800	51.98	218
South Surprise (B. & P. Syndicate	5	340	115.31	484
Tebekwe (A. N. Tyrrell)	10	1069	130.08	546
Tebekwe 1 (A. N. Tyrrell)	5	202	68.22	287
Veracity (J. Fischer) slimes ...	—	800	83.30	350
Wanderer (Selukwe) G.M., Ltd.	4GR	12090	1142.83	4800
Gwelo District Total			17,882.24	75,105
Matabeleland Total			34,507.31 ozs.	
Value			£144,929	

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT—				
Acorn Gold Mines, Ltd. ...	5	482	91.08	383
Do. (tailings)	—	260	36.88	155
Agnes (P. S. Triggs)	5	500	202.89	852
Do. (tailings)	—	588	28.51	120
Alabama (Rix & Reynolds)	3	150	74.16	311

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Battlefields (Rhodesia) Ltd. (Minaar and McArthur)	2C	1864	339.51	1426
Do. (tailings)		1552	240.56	1010
Do. (slimes)		312		
Blue Rock (Blue Rock Synd.)	2	275	40.39	170
Do. (tailings)	—	235	17.13	72
Brilliant (Mabel's Luck Synd.)	7 1P	841	366.58	1539
Do. (tailings)	—	304	70.65	297
Buller (J. Laing)	5	1175	140.33	589
Do. (tailings)		775	50.52	212
Butterfly (F. W. G. Richards)	—		6.33	27
Cheshire Cat (Tayener & Arnold)	5 1P	418	202.63	851
Do. (tailings)	—	300	91.22	383
Do. (slimes)	—	118		
Companion (C. H. Wheildon)	(5)	25	38.86	163
Concession and W. Extension (C. E. Simpson)	5 1C 2P	2409	410.09	1722
Do. (tailings)	—	1780	118.98	500
Dalny 1W. (Shagari Mines, Ltd.)	5	430	72.59	305
Do. (tailings)		300	43.70	183
Devils (M. Price)	5	45	10.18	43
Dowry (P. A. Enke)	1 PN	260	29.14	122
Dreadnought (W. E. Masters)	1 C	406	48.69	204
Duke No. 1 (Jose & Munro)	5	110	39.77	167
Eiffel Blue & E. Ext. (Willoughby's)	10	1731	527.07	2214
Do. (tailings)	–	900	61.50	258
Enney Ext. (Ellsmoor & Goodyer)	5	215	54.06	227
George (Heroine G.M. Co., Ltd.)	10	1500	169.18	711
Giant Mines of Rhodesia, Ltd.	30 2T	10,122	2306.36	9783
Glasgow Mines, Ltd.	5	610	108.76	457
Do. (tailings)	—	330	49.67	209
Glencairn No. 3 (Glenrosa Synd.)	4	368	276.76	1162
Do. (tailings)		253	16.26	68
Globe (E. J. Davies)	1 H	350	17.22	72
Golden Glade (J. H. E. Worrall)	(5)	58	45.63	192
Golden Valley (J. Mack)	5	448	254.63	1069
Do. (tailings)	—	315	96.38	405
Goodenuf (Hartley Pioneer Synd.)	1 H	520	108.09	454
Guelph (J. & M. Davidson)	(5)	102	83.86	352
Haji (Associat. Mines of Rhod., Ltd.)	(5)	95	102.03	429
Do. (tailings)	—	62	15.52	65
Harp Up (Associated Mines of Rhod., Limited)	5	94	80.90	340
Do. (tailings)		63	14.51	61
Inez (Harill & Smith)	10	700	257.64	1082
Do. (tailings)	—	500	120.04	504
Juno (H. R. Nicholl)	5	410	48.78	205
Do. (tailings)	—	270	32.10	135
Kanyemba (Kanyemba Synd.)	5	550	414.09	1739
Do. (tailings)	—	406	105.14	442
Midwinter (R. H. Winter)	2	292	86.10	362
Nada (G. H. Fison)	1 Pn	130	50.98	214
New Milky Way No. 3 (J. Mack)	5	240	46.74	196
Oleander G.M. Co., Ltd.	3	317	62.36	262
Do. (tailings)	—	142	58.93	247
Do. (slimes)	—	175		
Owl (A. Rolfe)	10	1410	484.47	2035
Do. (tailings)	—	993	167.00	701
Pickstone Gold Mines, Ltd.	10 1C	2840	981.57	4123
Do. (tailings)	—	1704	212.59	893
Pomposo (J. Knott)	5	630	281.54	1182
Rhino (H. W. Joslin)	(5)	58	23.03	97
Rosherville (Mrs. H. Tilbury)	1H	83	28.97	122
Rover (S. H. Coker)	2	115	79.05	332
Seigneury (Cen. M. & In. Cor., Ltd.)	5	410	167.57	704
Do. (tailings)		324	22.43	94
Shepherds (Phoenician (Rhod.), Co., Limited)	5 1T	780	206.82	869
Do. (tailings)	—	780	102.66	431
Sid (Sebakwe & Dist. Mines, Ltd.)	5	633	218.53	918
Do (tailings)		720	77.61	326
Tea (Cen. M. & Invest. Corp., Ltd.)	5	800	174.04	731
Do (tailings)	–	418	33.64	141
Thistle-Etna G.M., Ltd.	1C	3071	845.52	3551
Do. (tailings)	—	2369	196.96	827
Do (slimes)		617	57.39	241
Try Me 2 (R. R. Aitkin)	5	325	124.02	563
Do (tailings)		300	76.09	319
Victoria 2 (Crown Syndicate)	2	120	56.19	236
Do (tailings)		100	46.00	193
Washington (L. J. Minaar)	5	490	184.35	774
Do (tailings)		150	32.77	138
Do (slimes)		200	14.79	62
What Cheer & [illegible] (H. Moser)	5	670	133.11	560
White Rose (J. Mack)	5	574	117.57	494
Do (tailings)		272	19.03	80
Hartley District Total			13,658.24	57,459
LOMAGUNDI DISTRICT				
Alluvial (G. Blacklaws)			12.45	52
Do (R. G. Harding)			91.97	[illegible]
Do (E. A. Warty)			13.77	58
Do (E. W. Young)			14.76	62
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	7728	2303.59	9769
Do (tailings)		7510	765.17	[illegible]
Linnett (A. R. Morkel)	2	778	108.05	454
Pannings (J. Gough)	—	—	3.75	16
Do. (J. J. Polsley)	—	—	1.74	7
Ventura (Stone & Standen)	2	284	130.42	548
Lomagundi District Total			3,445.67	14,597
MAZOE DISTRICT.—				
Botha H. (B. G. Byerley)	5	1204	78.58	330
Chameleon (E. J. Ashford)	(2)	2	1.00	4
Commonwealth G.M. Co., Ltd.	(30)	200	32.89	140
Do. (tailings)	—	130	12.65	.54
Do. (slimes)	—	770	5.86	25
Honest (G. Brown)	3	78	55.50	233
Hope (Hope Tailings Synd.) tailings	—	1000	83.27	350
Jumbo G.M. Co., Ltd.	30	3100	569.93	2422
Do. (tailings)	—	1910	219.30	932
Do. (slimes)	—	1190	101.58	432
Kimberley (Mash.) G.M. Co., Ltd.	6 2T	2900	542.55	2303
Do. (tailings)	—	720	74.74	316
Do. (slimes)	—	2180	93.08	394
Mickey (B. G. Byerley)	2	365	107.53	452
Mitre 8 (Bishop's Synd.)	1D	21	13.23	56
New Found 1 N. (D. H. Curry)	5	325	129.85	545
Oceola G.M. Co., Ltd.	5	670	272.96	1146
Do. (tailings)	—	599	78.14	328
Puff Adder (Puff Adder Synd.)	2	180	96.94	407
Umkulu D.B. 1 W. (Llahsram Synd.)	2	290	57.71	242
Xmas 1 N.W. (Pearce Laland Synd.)	2	110	34.22	144
Mazoe District Total			2,661.51	11,255
SALISBURY DISTRICT.—				
Briar Tailings (J. Seton Rogers)	—	300	9.41	40
Hopefield (Hopefield Syndicate)	2	220	47.58	200
Do. (tailings)	—	200	35.06	147
Inyague 3 (P. L. Peters)	2	88	45.94	193
Louise Grand (H. S. Plant)	1H	668	81.26	341
Do. (tailings)	—	668	66.97	281
Mont d'Or (Claxton & Russell)	2	180	166.12	698
New Full Back G.M. Synd. Ltd.	2	125	21.06	88
Old Loyalty (Shamva Ilex G.M. Co., Limited)	5	200	119.23	501
Do. (tailings)	—	306	38.30	161
Salisbury District Total			630.93	2,650
UMTALI DISTRICT.—				
Cairndhu 2 W (E. K. Evans) slimes	–	200	22.47	94
Champion (J. Buchanan)	5	710	94.80	398
Do. (tailings)	–	510	108.30	455
Do. (slimes)		95		
Elgin (Umtali Waterfall Synd.) t'lings	—	31	32.70	137
Do. (slimes)		17		
Irol (Umtali Waterfall Syndicate)	(10)	224	6.38	27
Kent (E. Evans)	5	430	274.93	1155
King's Daughter D.B. (Umtali Waterfall Syndicate)	10	383	43.34	182
Do. (tailings)	—	322	38.89	163
Do. (slimes)	—	1399	112.14	471
Liverpool 38 (R. G. Snodgrass)	5	560	51.21	215
Do. (tailings)	—	220	16.48	69
Pilgrim 2 E. (J. Meikle)	5	518	117.59	494
Quagga (Quagga Synd.)	5	910	194.32	816
Rezende Mines, Ltd.	95	15721	1839.36	7804
Do. (concentrates)	—	166	608.52	2547
Do. (tailings)	—	2646	315.96	1341
Two Sisters (F. E. Markham)	2	55	21.31	90
Umtali (Umtali Waterfall Synd.)	(10)	192	45.59	191
Umtali District Total			3,944.29	16,649
VICTORIA DISTRICT.—				
Grand Slam (Ledingham & Hart)	5	330	104.57	590
Texas (G. Scott)	5	645	217.50	914
Do. (tailings)	—	700	61.69	259
Victoria District Total			419.76	1,763

MASHONALAND TOTAL... 24,760.40 ozs.
VALUE ... £104,373
GRAND TOTAL GOLD OUTPUT ... 59,267.71 ozs.
VALUE ... £249,302

SUMMARY.

Gold.	ozs.	Value.
Matabeleland	34,507.31	£144,929
Mashonaland	24,760.40	104,373
Total	59,267.71	£249,302
Silver, ozs.	12,401.42	1,280
Lead, tons	27.08	467
Chrome Iron, tons	5,448.80	12,163
Diamonds, carats	79.50	429
Coal, tons	22,051.00	(Sales) 7,171
TOTAL VALUE JULY OUTPUT		£270,812

DUST ALLAYING APPLIANCES IN RAND MINES.

A Detailed Account of Devices in Different Properties—Depths and Temperatures Recorded.

The following highly important statement of the depth, temperature and dust allaying devices of Witwatersrand mines is an abridged extract from the report of the Government Mining Engineer. The general nature of the equipment of the mines of the Rand in these matters has been often described in the columns of this journal, but the appended schedule goes much further and describes the appliances in use on each mine. It should, therefore, prove of special interest at a time like the present when so much attention is being bestowed on ventilating and dust allaying devices right along the Reef.

Name of Mine.	Vertical Depth of Shallowest and Deepest Workings.	Temperature. (Fahrenheit.)		Brief Description of all Jets and Sprays in Use.	Water Blasts.
	Feet.	From.	To.		
AURORA WEST UNITED. ..	200-1170	67°	70°	Pet cocks and Ideal sprays; $\frac{1}{2}$-in. hoses, $\frac{1}{4}$-in. tops.	Water blasts in end of drives and sprays at intervals. Air led in water-pipes; effective.
BANTJES CONSOLIDATED MINES..................	0-2350	57°	76°	Slotted and Burner jets.. ..	Sprays on stand-pipes in drives and water blasts. 6ft. x 6in. pipe filled with water. Air led into this and turned on at blasting time. Other types—air led into water-pipe.
BRAKPAN MINES, LTD......	3000-3900	74°	85°	Jet for drilling; sprays in drives	Water blasts and sprays on stand-pipes abou 100ft. back from all development faces. Effective.
CITY AND SUBURBAN.......	40-2539	68°	79°	Air jet and water jet at right angles and ordinary tap with small nozzle.	Water blasts are being experimented with; not very successful up to present. The mine is on single shift, and with use of jet all dust can be laid before shift starts again
CITY DEEP...............	2137-3360	70°	84°	Brass nozzle about 18in. long, giving jet of $\frac{1}{8}$in. for dry holes. Sprays are not extensively used on account of molassine.	No water blast is used, but a blast of molasses is used in development faces with beneficial effect.
CONSOLIDATED LANGLAAGTE	0-1960	Atmospheric to 80°		Mechanical atomizers used in development drives. Jets caused by water passing through each drilled $\frac{1}{4}$-in. plugs used in faces.	The water blast consists of a simple connection between air main and the water maine which has been enlarged to 2in. for on, length. The valve on the connection is so adjusted that the air pressure is sufficient to spray the water.
CROWN MINES— Western Section.......	0-2150	75		A number of sprays of various makes and sizes are used, a collection of which are in this office.	Not in use.
Eastern Section.......	0-3434	70°	81°	A number of sprays of various makes and sizes are used, a collection of which are in this office.	Quite effective where used. Water and air under pressure is sent into a tee piece, and a fine spray is the result, which effectively allays all dust and fumes.
CINDERELLA CONSOLIDATED	2945-4627	82°	86°	$\frac{1}{4}$-in. drawn pipe developers, Boston adjustable used as either jet or spray; 18 in use, 18 more being put in.	Water blasts. The water-pipe led into the air-pipe, or Lister or Boston adjustable sprays on stand pipe. Both are effective
DURBAN-ROODEPOORT......	0-1300	68°	72°	$\frac{1}{2}$-in. plugs with small holes. In developments jets and sprays are used.	No water blasts in mine; only sprays used back of development.
DURBAN-ROODEPOORT DEEP	1434-2408	72°	76°	$\frac{1}{4}$-in. pipes drawn to $\frac{1}{8}$-in. for dry holes in developments; $\frac{1}{4}$-in. tap and sprays.	Sprays and water blasts being used on some levels and being extended to all nevelopment faces. Effective.

Name of Mine.	Vertical Depth of Shallowest and Deepest Workings.	Temperature. (Fahrenheit.)		Brief Description of all Jets and Sprays in Use.	Water Blasts.
	Feet.	From.	To.		
EAST RAND PROPRIETARY MINES—					
Cason Section.........	100–3000	65° shafts.		Wollaston spray and ordinary jet	Water-pipe led into air-pipe in all developments. Effective.
New Comet	650–3000	72°	80° average underground		
Angelo Section........	0–3522	65° shafts		Wollaston sprays and Rose-ball sprays.	Water blasts in all drives.
Driefontein Section....	0–3405	72°	80° average underground		
FERREIRA DEEP...........	0–2400	62°	75°	Reunert & Lenz. Large and small atomizers, also Nell's type sprays. A number of Climax air and water sprays.	Water blasts are now being put in all drives. So far they have given satisfaction.
GEDULD PROPRIETARY MINES	1620–1945	72°	76°	Jets in drives, sprays along drives, and water blasts in all drives.	Sprays on stand-pipes 100ft. back from each development face. Effective.
GELDENHUIS DEEP.........	0–2700	No record		Demming spray	Water in air-pipe.
GINSBERG.................	0–1380	63°	70°	Waugh sprays for drills; Holman sprays in development; Rand Rubber & Asbestos Co.'s atomizers in drives.	Holman sprays in development faces. Very effective.
GLENCAIRN................	0– 996	70°		Rand Rubber & Asbestos Co. ..	—
JUPITER..................	2830–5040	70°	90°	Gas jet	Barnett's.
KNIGHT CENTRAL..........	1600–3350	65°	85°	Saturator	Water in air-pipe.
KNIGHTS DEEP............	970–1850	72°	76°	Rand Rubber Asbestos Co. ..	Water in air-pipe.
LANCASTER................	320–1800	62°	75°	¼-in. pet-cocks and atomizers in drives.	Mine closed down.
LANGLAAGTE ESTATE, BLOCK "B"...................	0–1750	68°	80°	Atomizers. Rand Rubber Co. ..	None in use.
LANGLAAGTE ESTATE.......	50–1435	55°	70°	Jet only used, composed of pipe 1 in. long and ⅜-in. bore.	None in use.
LUIPAARDSVLEI ESTATES ...	198–1675	66°	80°	¼-in. brass spray taps	Water blasts in development drives. Sprays in some cross-cuts. Effective
MAY CONSOLIDATED........	0– 855	No record		Demming	—
MAIN REEF WEST, CONSOLIDATED MAIN REEF.......	165–2120	65°	75°	Sturrock atomizers and ¼-in. taps	Water blasts in development and in cross-cuts from shaft. Air led into water-pipe. Effective.
MEYER AND CHARLTON.....	469–1650	70°	74°	The Boston spray. The appliance can be made to throw a jet or spray as desired; also small pipe put in drill-hole.	None in use.
MODDERFONTEIN "B".....	0– 860	Atmospheric	to 68°	Hoses with jets-sprays	Sprays on stand-pipes placed 100ft. back from development faces, excepting in winzes, where they are placed somewhat further back. Effective.
MODDERFONTEIN DEEP LEVELS................	3000–3070	—		Jets in all faces and sprays on drives.	Sprays on stand-pipes near all development faces.
NEW GOCH...............	400–2000	71°	76°	Sturrock's Rose-ball spray and Henwood's Ideal. The latter gives a jet or spray as desired.	Not in use.
NEW HERIOT..............	703–1640	64°	74°	Jet, 2ft. copper; pipes for machines. Plug sprays—Masters' sprays.	None in use.
NIGEL.....................	0– 895	No record.		No sprays	Water blast.
NEW KLEINFONTEIN........	0–1800	Atmospheric	to 80°	Jet in stopes and development and rose-ball sprays.	Water blasts. Lister adjustable sprays on stand-pipes near all development faces. Effective.
NEW MODDERFONTEIN.....	0–1820	60°	90°	Nozzle jets; sprays, No. 1 atomizer and dust saturator.	Sprays on stand-pipes 100ft. back from each development face. Effective.
NEW PRIMROSE............	0– 980	64°	71°	Ball spray, Transvaal Rubber Co.	Water in air-pipe.

Name of Mine.	Vertical Depth of Shallowest and Deepest Workings.	Temperature. (Fahrenheit.)		Brief Description of all Jets and Sprays in Use.	Water Blasts.
	Feet.	From.	To.		
NEW RILTFONTEIN........	0-1160	63	73	Ball spray, Transvaal Rubber Co. German spray.	Water in air-pipe.
NEW UNIFIED............	180-1260	72	75	¼-in. taps, 1/16-in. jets	Water blasts in every development face and sprays in the drive. Effective.
NOURSE MINES...........	0-2090	66°	80	Various forms of atomizers used to damp the main air current thoroughout the mine. Special jets of iron or copper of suitable size to introduce into the hole when drilling, so that no holes are ever drilled dry. Sprays to wet down stopes and all dry faces. Water is laid on everywhere under good pressure to the face.	Three or four atomizers in bent pipe, which thoroughly damps the main air currents with very finely atomized water during blasting time, and subsequently molassine meal mixture also applied. Good water pressure necessary, and some trouble experienced owing to clogging of appliances with dirt and tendency of employees to remove atomizers, etc. On the whole, these are effective and render considerable assistance in laying dust.
PRINCESS ESTATE	0-2635	60°	77°	¼-in. pipes drawn to 1/16-in. in developments. Simplex atomizer used in drives.	Water blasts in every development face and sprays in drives. Pickthaal types. Effective.
RANDFONTEIN CENTRAL —					
Southern Division.....	0-2272	68°	73°	Atomizers and ¼-in. taps, Rose-ball.	Water sprays in development faces. Strong pressure of water from pump columns.
Northern Division.....	0-1380	68°	74°	Atomizers, ¼-in. taps. Bartle sprays.	No water blast is used.
ROBINSON GOLD MINE......	60-1545	68°	76°	Sturrock & Co., Rand Rubber Co., Reunert & Lenz.	Two "James" are installed and are very effective.
ROBINSON DEEP..........	1619-3728	68°	81°	Perforated brass cap on water-pipe. Perforated tee-pieces, with plug at one end. Water and air introduced at other openings. Very effective.	Water blasts consist of perforated tee-piece, with plug at one end and water and air introduced at other openings. Same are kept close to faces and very are effective.
ROSE DEEP...............	650-1540	83°		Transvaal Rubber Co.	Water in air-pipe.
ROODEPOORT UNITED MAIN REEF..................	0-2200	63°	77°	Rose-ball atomizer. Vermorel spray and Ideal spray.	Sprays at frequent intervals in all drives. Water blasts in development faces. Air led into water-pipe. Effective.
SPES BONA TRIBUTE.......	130- 800	60°	72°	Ordinary armoured hose with flattened nozzle to spray.	None in use.
SIMMER AND JACK.........	0-2500	No record.		Gas jet	Water in air-pipe.
SIMMER EAST............	1370-3550	72°	89°	Rand Rubber & Asbestos Co. ..	Water in air pipe.
SIMMER DEEP............	2300-4780	65°	80°	Wiltshire spray	Water in air-pipe.
SUB-NIGEL...............	772-1620	No record.		T.A.B. sprays	Water in air-pipe.
VAN RYN DEEP..........	2500	70°	77°	Jets in all faces. Sprays along drives.	Sprays on stand-pipes near all development faces.
VAN RYN ESTATES........	0-1600	45°	60°	Jet drawn pipe in general use. Geduld water spray.	Water-pipe led into air-pipe in all development faces, except in winzes. Effective.
VILLAGE MAIN REEF.......	100-2000	71°	75°	Wollaston saturators. Climax sprays.	None in use. No driving being done.
VILLAGE DEEP...........	1924-4245	60°	70°	Wollaston's sprays are used behind developers and in main travelling ways.	The water-pipe is led into the air-pipe near the drive or winze face. Before blasting, the air and water taps are opened. The blast is very effective.
VOGELSTRUIS ESTATES.....	0-1950	67°	76°	¼-in. taps with jets and sprays ..	Water blasts only being used in development.
WEST RAND CONSOLIDATED	30-1685	68°	74	Ideal spray only	Water blast in all development faces, except raises and winzes, and sprays in drives. Air led into water-pipe. Effective.
WEST RAND CENTRAL......	700- 873	—		—	None in use.
WITWATERSRAND..........	0-2250	63°	75°	Ball spray, Burner. Transvaal Rubber Co.	Water in air-pipe.
WITWATERSRAND DEEP.....	330-2675	75°	78°	Jets in all faces and sprays in all drives.	Sprays near all development faces. Effective.
WOLHUTER...............	68 1745	61°	75°	Pipe jets fitted with reduced nozzles and cocks for insertion into the holes whilst drilling. Distributing sprays and rose jets for applying water to the face. Automatic rotating sprays for use in drives to impregnate the air current with moisture.	None in use.
YORK GOLD MINING CO.....	0- 600	53°	58°	Britton's atomizers or straight jets	None in use.

THE WEEK IN THE SHAREMARKET.

Steady, but Quiet—London Comes Stronger— Outlook Improving.

THE market remains steady, with very little business doing. A better note, however, was struck on Friday, and it is thought that the improvement is likely to be maintained. Van Ryn Deeps and Modder B's have enjoyed the most of the business doing during the week.

Mail advices from London are to the effect that for the time being business is mainly in the leading stocks, which enjoy a free international market, and in certain of these descriptions, such as Rand Mines, Modderfontein, Modder B. Gold Fields, Crown Mines, Central Mining, East Rands, and Randfontein, prices have readily responded to the improved sentiment. The public demand is now likely to spread to the general list of outcrop and deep level shares and to the land descriptions. In fact, a timely hint is given that many of the shares, in the latter category especially, are still standing at an attractively low level, after a prolonged period of neglect. As regards Rhodesians, this section has been very active during the past week—more animated, indeed, than Kaffirs—and a sharp rebound has occurred throughout the list. Certain of the principal shares were under undue pressure, but the weak positions have now been eliminated, and energetic support is again being given by the big groups. The buying of Chartered has been a specially noteworthy feature. These shares have been bought in very large lines, and option dealings on a substantial scale for dates up to the end of the year are also reported. There is some talk that the big land scheme which was under consideration last year, and which was postponed for a more favourable opportunity, is again to be brought forward. Gold Fields Rhodesia Development, Cam and Motor, Falcons, Giants, Willoughbys and other popular shares have moved ahead in decided style, and the Copper sorts, including Tanganyikas, Zambesias and Northern Coppers, have also been in consistent request. Tanks in particular, are enjoying favour on the Continent, now that the outlook for the smelting is so much more assured. Diamonds have been strongly on the up grade, with De Beers and Premiers leading the way. It is reported that the trade in the stones is increasing rapidly, as the result of the great prosperity which is being enjoyed by the commercial classes in all the leading countries.

	Fri., 29th.	Sat., 30th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thur. 4th.
Adair Ushers ..	0 6B	0 6B	—	0 3B	0 4B	—
African Farms ..	14 10	14 8	14 9	14 7	14 7B	14 6B
Apex Mines ..	—	—	—	18 0s	14 6B	17 6s
Bantjes Cons. ..	—	14 0B	14 3B	14 0B	14 0B	14 6
Benoni Cons. ..	2 0B	2 3B	2 0B	2 0B	2 3	2 1B
Brakpan Mines ..	—	58 9B	57 6B	—	56 0B	57 0B
Breyten Collieries ..	—	—	30 0s	25 0B	—	—
British S.A. ..	21 0B	—	—		—	20 6B
Bushveld Tins ..	0 9s	0 8s	0 9s	0 6B	0 6B	0 7B
City & Subs. (£4) ..	42 6B	42 6B	42 6B	42 6B	42 9B	42 6B
City Deeps.. ..	53 0B	52 9B	—	54 0B	52 9B	52 6B
Cloverfield Mines ..	4 3B	4 3B	4 0B	4 1B	4 1B	4 1B
Clydesdale Colls. ..	8 0B	8 9B	8 9B	8 9B	9 6s	—
Cons. Investment	—		18 6B	—	—	18 6B
Cons. Langlaagte	24 6B	24 0B	—	24 6		
Cons. Main Reefs..	16 0B	16 0B	16 9B	16 0	16 0B	15 9B
Coronation Freeholds	0 5B	—	0 5	0 5	0 5B	0 5B
Crown Diamonds ..	10 0B	10 6B	10 6B	10 6B	10 9	10 3B
East Rand Deeps	1 7s	1 4B	—		1 6	—
East Rand Prop. .	44 0B	—	43 0B	42 0B	43 0B	
Eastern Gold (1/-)	1 3B		1 3B	1 3		1 0B
Frank Smith Diam.	8 3	8 0	7 9B	7 9B	8 3	8 3B
Geduld Prop. ..	20 0B	20 6	19 6B	—	21 6s	
Glencairns ..	—	2 3B	—	—	—	2 3B
Glencoe (Natal) Colls.	7 3B	7 6B	7 6B	7 6B	7 6B	7 3B
Glynn's Lydenburg	14 6s	14 6s	14 6s			
Government Areas	20 6B	20 6	20 6B	20 6B	20 6	20 3B
Jumpers	—	1 6s	—	—	—	—
Jupiter	5 0B	1 6B	1 6B	1 0B	4 3B	4 6B
Kaalfontein D. (2/6)	0 5B	0 3B	0 3B		0 3B	0 3
Klerksdorp Prop. ..	2 1B	2 0B	2 0B	2 0B	2 0B	2 6s
Knight Centrals ..	7 6B	7 0B	7 0B	7 0B	7 9	6 0B
Lace Prop. ..	2 6B	2 6B	2 6B	2 6	2 6B	2 6B
Luipaardsvlei Est.	1 0B	—	—		5 0B	—
Lydenburg Gold Fms.	—	—	3 0s	2 6B	2 6B	2 9
Main Reef Wests ..	8 6B	8 9B	8 9B	8 6B	8 9B	8 6B

	Fri., 29th.	Sat., 30th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thur. 4th.
Main Reef West Debs.	£62½B	£62½B	—	£60B	£60B	—
Messina Development	—		—	—	26 0B	—
Middlevlei Estates	—	1 0B	1 0B	1 0B	1 0B	1 0B
Modder B's ..	80 0s	—	—	—	76 0B	—
Modder Deeps ..	30 0s	29 3B	—	29 9	29 6B	29 6B
Natal Navigation Col.	—	—	—	15 0B	—	—
New Eland Diam.	—	—	—	—	—	20 0B
New Era Cons. (5/-)	6 9B	6 6B	6 6B	6 0B	6 6B	6 0B
New Geduld Deeps	1 9B	1 9B	1 9B	1 9B	1 9B	1 9B
New Kleinfonteins	19 0B	19 0B	19 0B	18 6B	18 6B	18 0B
New Unifieds ..	14 3s	14 3s	14 3s	14 0s	14 0s	14 0s
Nigels	—	15 6B	—	—	16 0B	—
O.F.S. & Trans. Dia.	1 9B	1 9B	1 9	1 6B	1 6	—
Pretoria Cement Co.	47 6B	47 6s	48 0s	48 0s	48 0s	48 0s
Princess	4 0B	4 0B	4 0B	4 0s	4 0B	4 0B
Rand Klips ..	1 3B	1 4B	1 3B	1 0B	1 6	1 6s
Rand Nucleus ..	2 1	2 0B	2 0B	—	1 11B	2 0B
Randfontein Deeps	—	—	3 0B	—	2 6B	—
Randfontein Estates	26 3B	26 3B	26 0B	26 3B	26 3B	26 3B
Robinson Deeps ..	31 6B	31 6B	31 6B	32 6s	32 6s	32 6s
Rooiberg Minerals..	28 3B	28 9B	28 9B	29 0*	28 0B	28 3B
Shebas	5 0B	—	5 0B	—	5 0B	—
Simmer Deeps ..	—	—	2 0B	2 6B	2 0B	—
S.A. Breweries ..	40 0B	40 3B	40 3B	40 6B	40 6B	40 6B
S.A. Lands ..	3 0B	3 0B	—	3 2	3 0B	3 1B
Springs Mines ..	15 6B	15 6B	15 6B	15 6	15 0B	15 0B
Sub Nigels ..	9 6	9 0B	9 0B	9 0B	9 3B	—
Swaziland Tins ..	45 6B	45 6B	45 6B	46 6	47 0B	48 0B
Trans. & Delagoa ..	37 6B	—	37 6B	—	—	—
Trans. Coal Trusts	36 0B	36 0B	36 0	36 3s	36 0B	35 3
Trans. G.M. Estates	52 6B	52 6B	52 6B	52 6B	52 6B	52 0B
Van Ryn Deeps ..	29 6	29 3B	29 6B	29 6	30 3	30 3
Village Deeps ..	39 6s	39 0s	—	—	—	—
Vogel. Cons. Deeps	—	—	—	0 9s	—	—
Witbank Collieries	41 6B	41 6B	—	38 0B	38 0B	—
Witwatersrands ..	—	63 6B	65 0B	—	—	63 0B
Wit. Deeps ..	55 0B	55 0	54 0B	55 6s	54 3B	55 0s
Wolhuters	13 6B	13 6B	13 6	13 0B	13 0B	14 0
Zaalplaats Tins ..	37 9B	38 6	38 0	37 9	37 9	37 6B

B Buyers. S Sellers. *50 Shares.

The Union Estimates for the year ending 31st March, 1914, show under Vote No. 35—Mines Department—the following, *inter alia*:—

	Estimates, 1913-14. £	Estimates, 1912-13. £	Increase. £	Decrease. £
Miners' Training School.				
Salaries, wages and allowances ...	5,602	5,144	458	—
Transport and travelling ..	50	50	—	—
General maintenance expenses	1,775	2,230	—	455
Contributions to Miners' Phthisis Funds in respect of apprentices	2,000	—	2,000	—
	£9,427	£7,424	£2,458	£455
Boring for Minerals.				
Salaries, wages and allowances	2,128	2,269	—	141
Transport and travelling ...	450	360	90	—
General Working Expenses	1,500	1,540	—	40
	£4,078	£4,169	£90	£181
General.				
Assistance for district mining development	21,200	20,000	1,200	—
Filling in and fencing abandoned shafts	500		500	
Trading stand licences	1,100	1,100		
Miners' Phthisis Prevention Committee	500	500		
Miners' Phthisis Board	9,245	5,500	3,745	
Non recurrent	—	100,000	—	100,000
	£32,545	£127,100	£5,445	£100,000
Total	£204,357	£288,278	£17,140	£101,061

Net decrease, £83,921

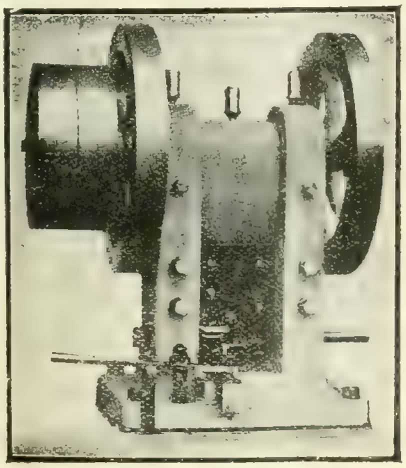
Engineering Notes and News.

Accidents in Shafts.

During 1912 in the Transvaal there occurred seventy-five cases of overwind or runaway of the conveyance (cage, skip, or kibble) in shafts or winzes. In nineteen instances death or serious injury was caused to persons. There were five cases of overwind in the other Provinces, only one of which caused serious injury. The total of eighty overwinds or runaways is exactly the same as in the previous year, while the total casualties are slightly less. Concerning the eighteen of these accidents that occurred when persons were travelling, in seven cases no personal injury resulted, but in the other eleven cases, only one of which was due to defective plant, three white persons and twenty-three coloured were killed, and five whites and thirteen coloured persons were injured. The most serious of these accidents occurred at the New Comet shaft of the East Rand Proprietary Mines on the 3rd September, and consisted of the runaway of a skip containing twenty-five persons. The lever of the steam operated gear of the friction clutch of the drum from which this skip was dependent had just been worked, but owing to some undiscovered cause there was sticking in either the steam or the cataract cylinder, probably the former, and the clutch did not engage. This fact was not evident to the engine-driver, who took off the brake and proceeded to lower. By the time the driver had noticed that the drum was free and applied the brake, the speed was too great to be adequately controlled; the skip therefore practically ran away to the bottom of the shaft, a distance of over 3,000 feet on an incline of 52 degrees. One European and seventeen coloured persons were killed, and seven coloured persons injured. This accident led to the following proposed amendment to the regulations: "When the winding engines are fitted wtih friction clutches, the engine-driver shall, when clutching-in, test the holding power of the clutch against the full power of the engine before releasing the brake of the corresponding drum, the brake of the other drum being kept off." Another serious runaway accident occurred at the west shaft of the Consolidated Langlaagte Mines on the 5th August. In this case the driver probably withdrew the clutch of the drum by mistake or else deliberately disobeyed Regulation 15 (5) and lowered from an unclutched drum. One white person was killed and one injured, while two natives were killed. The engine-driver's certificate was suspended for three months by the Inspector of Mines, and in the Magistrate's Court he was fined £10. Of the eighty overwinds or runaways, sixty-five occurred with winding engines licensed for the transport of persons, seventy-six with the engine in charge of certificated drivers, one with a white uncertificated driver, and three with coloured persons in charge. In forty-five cases the certificated engine-driver was considered to be at fault; thirteen certificates were suspended for periods varying from fourteen days to six months, and thirty-two official cautions were administered. In eleven cases the accident was judged to be due to defective plant or circumstances outside the control of the engine-driver. In the remaining twenty cases where certificated drivers were in charge, no action was taken, the occurrence being of but slight importance, and a verbal caution was sufficient. The causes of these overwinds or runaways have been carefully considered, and it has been found that, apart from accidents of comparatively rare occurrence caused through failure or breakage of plant, at least five distinct classes in which carelessness is wholly or mainly the cause exist. These are: (1) Starting to lower with the reversing lever in the position for raising; (2) changing winding from a lower to a higher level, engine-drivers forgetting the fact and watching the indicator of descending side; (3) changing from skip to cage, and engine-driver forgetting the fact, or driver forgetting that persons are being raised in the skip; (4) lowering unbalanced with electric winder on counter-current, too great speed developed, or too sudden application of reverse current, failure of resistance control of rotor, tripping of switch of stator current, and failure of single brake to control runaway drum; (5) lowering on "compression" with reversing lever against the motion, too much compression created, cage stopping too soon or descending too slowly, and driver puts reversing lever over to the other position without safeguarding the motion with the brake. There were thirty-two cases of class (1) in which the engine-driver started winding with the reversing lever in the wrong direction. There were six cases of overwind of class (2). It is a very dangerous class, as the overwind nearly always occurs at high speed with throttle valve wide open. No invention has as yet been introduced on these mining fields to prevent the engine-driver concentrating his attention on the "down" indicator, and this is what is necessary to prevent accidents of this class. There were two cases of class (3), fortunately unattended by serious injury to persons. Carefulness of the engine-driver is the only remedy. In class (4) are included five accidents; three of them occurred when the winding was "out of balance" (i.e., with the drum on the opposite side unclutched), and two cases when in balance. Four of these accidents were caused by flash over in the starter tank, and one by flash over at stator terminals, the resistance in this case being metallic. The application of reverse current to a descending skip has the effect of enormously increasing the voltage across the rotor terminals, which, instead of being a maximum of about 600, as under usual starting conditions, reaches 2,000 or more; also the periodicity may be increased to 150 cycles or over, instead of a usual maximum of 50. The liquid starter tank, which may be quite capable of dealing with voltages of 600 or thereabouts, fails under the stress of 2,000 and causes an open circuit which immediately nullifies all electric braking effects. By this time the momentum has reached such an amount that the mechanical brake is inadequate. Improvements are being made in the liquid starter tanks to permit them to deal with the additional voltage and energy due to the descending skip so that the operation of lowering "unbalanced" may be attended with safety without the continual use of the mechanical brake and the slow speed thereby involved, or without keeping one of the old steam cylinders (in the case of a "converted" hoist) connected up to allow of lowering "on compression." There were only two cases of class (5) during the year under review, but in each case a person was injured. Detaching hooks were successful in every instance except one, and in this case the clearance in the headgear for the skip bridle was not sufficient, and the rope was broken before the safety hook came into action. It may be noted here that in one case on the Rand a detaching hook of the ordinary pattern is being successfully used in a "compound" shaft and no difficulty has been experienced in negotiating the bend or in running on the incline. The hook is, of course, fitted quite close up to the bridle. During the year there were five appeals by winding engine-drivers to the Government Mining Engineer against sentences of suspension imposed by inspectors of mines, and in four cases these were successful, the reduction in sentences allowed being, however, granted as an act of clemency, and in recognition of long and satisfactory previous service.

Winding Plants in the Transvaal.

The inspections of winding plants in the Transvaal numbered 154, and 107 tests of brakes were carried out during the year, says the Chief Inspector of Machinery in his annual report. There were ten unsatisfactory tests or inspections, but in all cases the defect or deficiency was attended to and the permits subsequently granted. These inspections, in most instances, do not have reference to new winding plants, but were carried out in cases where alterations to the machinery or in the carrying capacity had taken place. Fifty permits were withdrawn during the year owing to work being stopped in certain shafts or to the fact



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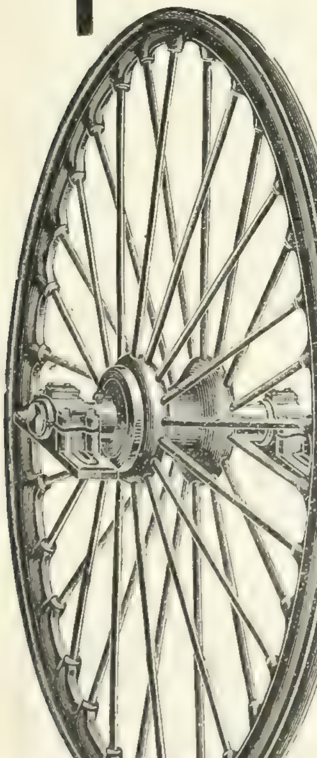
that new winding plant was installed, in which latter case new permits were issued. The total number of permits in operation as at 31st December, 1912, was 383, these applying to 676 compartments in 282 shafts at 94 mines. The number of winding ropes in use on the licensed plants is 934. The conveyances (cage, skip, trolley, or bucket) at these shafts were licensed up to a total carrying capacity of 8,973 persons. The number of electric hoists has largely increased. Two of the largest licensed are of the Ward Leonard type, and capable of raising a load of 8 tons at a maximum speed of 4,000 feet per minute, the vertical depth being 3,500 feet. For raising and lowering persons, a four-deck cage is used, accommodating seventy-six men. The speed is then limited to 3,500 feet per minute. Each winder has cylindro conical drums, and is driven by two motors having a combined maximum of 5,500 horse-power. The winding ropes are of 2 inches diameter, and have an actual breaking load of about 190 short tons.

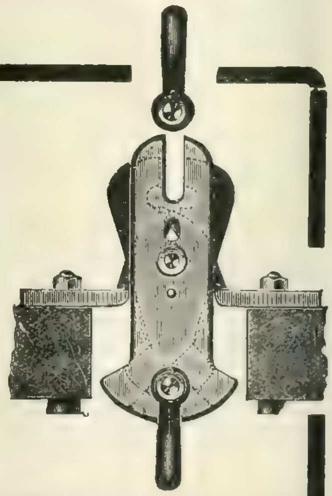
Extraction of Zinc from Zinciferous Slags.

A new technically and economically workable process, which may also be applied to the recovery of zinc from zinciferous residues and low-grade ores, has recently been patented in Germany. It is carried out in the reverberatory, and not, as has hitherto been customary in such cases, in the shaft furnace. The slags are either melted in the reverberatory itself, or, if it is preferred to treat them directly when coming out of the blast-furnace, they are introduced into the former in a liquid condition. When the molten mass is thoroughly fused the zinc-extracting agents are added. They consist of carboniferous substances, such as coal, coke, etc., with metallic iron or iron alloys as reducing agents and basic substances, such as lime and limestone, as reagents. The quantity of the lime to be used depends on the zinc oxide and lime contents of the slag, and ought to be just sufficient to make the final produce—i.e., the un-zinced slag—contain from 25 to 35 per cent. CaO. As soon as the different fluxes have been added to the molten mass the reaction begins, and zinc vapours are generated, which, either in the furnace atmosphere or by special introduction of air, are transmuted into zinc oxide. The extraction of the zinc proceeds quickly, but may be accelerated by stirring and moving the mass.

Mr. E. P. Cloete, a miner at the Rose Deep, Germiston, has been awarded the bronze medal of the Order of St. John for his heroic rescue of a comrade on Wednesday, April 16th. This is the fourth or fifth award for valour made to miners in the Germiston area during the last three years, and in no case has it been better deserved. On the afternoon of April 16th, Mr. Cloete had finished his round, lighted his fuses, and reached the level en route for the shaft station, when he heard the roar of the first series of explosion from a neighbouring stope, which he knew to be in charge of a miner named William Gregson. The blast extinguished Cloete's lamp, and he was about to hurry out of reach of the dynamite fumes, when he heard a faint call for help. Quickly relighting his lamp, Cloete jumped down into the stope, where he saw Gregson, obviously terribly injured, trying to drag himself over broken rock. Just then another charge exploded, but with amazing courage Cloete went to Gregson's help, and, in spite of successive explosions, flying debris and acrid and poisonous fumes, got him out of the level.

The profit and loss account of the Rhodesian Copper Company for the year ended May 31, 1913, shows a credit balance of £5,027, which, added to the balance brought forward, viz., £10,222, makes a total of £15,249 to the credit of the account. On various occasions the directors have been asked to make a distribution by way of dividend to the shareholders of the company's large holding in the Bwana M'Kubwa Copper Mining Company, but they have not been able to do so, as such a distribution could only be made in the form of return of capital. At the forthcoming meeting, however, a resolution will be proposed to the effect that the capital of the company be reduced from £562,500 to £352,793 2s., and that such reduction be effected (a) by distributing in redemption of capital among the holders of the 1,172,512 shares numbered 1 to 1,172,512 inclusive, which have been issued, rateably in proportion to the shares held by them—293,128 fully-paid shares of 10s. each of the Bwana M'Kubwa Copper Mining Company, Ltd.—53,296 fully-paid shares of 5s. each of the Rhodesia Broken Hill Development Company, Ltd., 53,296 fully-paid shares of £1 each of the Kafue Copper Development Company, Ltd., and £14,656 8s. in cash, but so that shares which, but for this provision, would be distributable in fractions, shall be sold by the company, and the net purchase money substituted for the fractions, and (b) by reducing the nominal amount of each of the shares in the company's capital, numbered 1 to 1,398,046 inclusive, from 7s. 6d. to 4s. 6d.





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MINING MEN AND MATTERS.

Mr. W. H. Dawe has returned to the Rand.

* * * *

Mr. A. S. Wheeler has gone to Russia in connection with oil ventures.

* * * *

Mr. D. V. Burnett, M.Inst.M.M., has returned to England from South Africa, on a short holiday.

* * * *

Mr. I. Tom. A.R.S.M., Assoc.Inst.M.M., has been appointed Consulting Engineer to the South African Diamond Corporation, Ltd., at Johannesburg.

* * * *

Mr. C. Robinson, manager of the New Heriot, has gone on leave. Mr. Howard Warren, underground manager of the Village Main Reef, is acting.

* * * *

There was a large gathering at the obsequies of the late Mr. McHardy, general manager of the Premier Diamond Mine, formerly of Kimberley, which took place at Cullinan last week.

* * * *

Mr. P. Selby has returned to South Africa, and Mr. M. O. Tillard booked by the Galway Castle leaving Southampton on the 30th ult.

* * * *

Mr. Swift has been appointed manager of the T.C.L. Tin property on the Oliphants River in the Potgietersrust district, in place of Mr. Blaine, who has gone to another of the company's propositions.

* * * *

The fifth annual dinner of former students of the Royal Technical College, Glasgow, will be held at the Carlton Hotel, Johannesburg, on Saturday, 27th September, 1913, at 8 p.m. Tickets, price 17s. 6d., can be obtained from the hon. secretary, Mr. Jas. Gray, Box 5251; 'phone 4240.

* * * *

The special meeting of members of the Geological Society of South Africa, postponed from August 25th last, will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday evening, 8th September, 1913, at 8.15 p.m., to consider and, if thought fit, to adopt the following amendment to Section IX. (1) of the Rules of the Society, viz.:—That the following words be added to Section IX. (1): "or at such date as may be decided by the Council." The rule as amended will thus read:—"The Annual General Meeting of the Society shall be held in the Meeting Room of the Society on the last Monday of January in every successive year, or at such date as may be decided by the Council." Immediately after the special meeting the ordinary monthly meeting of members of the Society will be held. The minutes of the ordinary monthly meeting held on the 30th June, 1913, will be read. The following papers will be open for discussion:—"Notes on a Section from Barberton to the Komati River," by David Draper (hon. member); "The Bushman's River Cretaceous Rocks," by E. H. L. Schwarz, A.R.C.S.; "The Geology of Katanga and Northern Rhodesia—an Outline of the Geology of South Central Africa," by F. E. Studt, A.R.C.S. The following papers will be read:—"The Cassiterite Lodes of Leeuwpoort (938), the Paragenesis of the Lode-forming Minerals," by David P. MacDonald, M.A., B.Sc. (postponed from August 25th); "Notes on the Tin Deposits of Embabane and Forbes Reef in Swaziland," by A. L. Hall, B.A.; "The Terraces of Eerste River at Stellenbosch," by S. J. Shand, D.Sc., Ph.D.

The liquidators of Amalgamated Properties of Rhodesia (in liquidation) states that notices of dissent under Section 192 of the Companies (Consolidation) Act, 1908, have been received from 65 shareholders, holding in the aggregate 11,753 shares. There are approximately 16,000 shareholders in the company, together holding 3,784,904 shares. The time for lodging notices of dissent expired on the 5th inst.

At a meeting of the German Imperial Bank, this week, the Vice-President declared that a reduction of the bank rate was still impossible, although the bank's present bullion deposit was nearly nine millions sterling above that of August last year, despite the transfer of over a million to the war treasure. Germany had imported during 1913 up to the present 11 millions sterling, and exported 2¼ millions. Before lowering the rate they must see whether the easiness of the money market was not only temporary. It looked as if there would be a period of strain at the end of September.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre Wheeler Edwards Company...	8.15
Standard:	See bills.
Empire	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 & 9

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Finance, Commerce, and Industries.

Customs Exchequer.

The Customs imports, exports, and revenue collections of the Union of South Africa for August are officially announced as follows: Capetown: Value of imports, £681,610, value of exports, £3,044,493; gross revenue duty, £84,708. Port Elizabeth: Imports, £826,478; exports, £206,130; revenue duty, £86,853. East London: Imports, £368,007; exports, £43,188; revenue duty, £41,207. Durban: Imports, £988,853; exports, £308,974; revenue duty, £93,894. Lourenco Marques: Imports, £428,496; revenue duty, £18,535. Other ports and stations: Imports, £53,386; exports, £99,917; revenue duty, £21,229. Johannesburg: Gross revenue duty, £62,591. General Post Office: Gross revenue duty, £8,997. Totals: Value of imports, £3,346,830; value of exports, £3,702,702; gross revenue duty, £418,014. The Capetown exports include gold. The duty collected by Magistrates is not included.

* * * *

Decreased Railway Earnings.

Speaking on the question of Railway earnings at the monthly meeting of the Johannesburg Chamber of Commerce, Mr. H. Wallace Soutter said: You will see that the returns of the South African Railways for the thirty-three weeks ended the 16th inst., as compared with the corresponding period of 1912, show a decrease of over £93,000. The decrease in goods amounted to £43,054, but the large decrease is in coal, amounting to £118,962, and, if it had not been for the increase in passenger earnings, £74,539, the total earnings would have fallen very much below the average. These earnings do not reflect in any considerable degree the result of the interference with trade during the period of the industrial unrest, but the result of this will be seen at a later date. The tonnage returns of the seaborne traffic from the ports to the competitive zone of the percentage of the various ports average, from the Cape for the seven months this year 15·05 as compared with 13·56 last year. Natal 33·79 as compared with 31·01 last year; Delagoa Bay 50·90 against 55·43.

* * * *

Tax on Trade.

The *Pall Mall Gazette*, referring to a message from the Capetown correspondent of the *Telegraph*, to the effect that the Union contemplates withdrawing British trade preference, says this will mean the imposition of half a million sterling annually on manufactures from Britain. The paper continues: "This will be cheerful news for our Continental rivals. We have no legitimate complaint against South Africa for such a step, but only against the Imperial Ministers who refused reciprocity, and cannot therefore expect the Dominions to continue tokens of family affection."

* * * *

The Establishment of Industries.

At a meeting of the Executive of the Pretoria Civic Association, this week, Mr. Ashdown brought up a report of the Industries Committee, appointed to enquire into the subject of the establishment of industries suitable to Pretoria. The report stated that with reference to the iron industry, they were now awaiting the result of Mr. Karlsen's visit to Sweden. In consultation with Mr. Delfos, the committee decided that a sum of £30 should be cabled to Mr. Karlsen, who is now in Europe, and that he should be asked to proceed to Sweden and obtain all particulars regarding the experiments that have been carried on there with iron ore found in the Pretoria district. In reference to the paper-making industry, which gave promise of a great future, the committee had arranged for the sending of samples of veld grass and mealie stalks to Great Britain and America for the purpose of having them tested as to their suitability for paper-making. It had, said the report, been thought advisable for the present to confine the investigations of the committee to the manufacture of the rougher kinds of paper, paper bags, and strawboard, which is so extensively used for bookbinding and for the making of paste-board boxes. The machinery manufacturers of England and America had been asked to send out samples of the paper manufactured from the material sent from Pretoria by the committee, together with the cost of machinery necessary to produce from ten to fifteen tons of paper and strawboard per week. A sample of the veld grass had also been forwarded to Holland with similar instructions and enquiries. The report of the committee in connection with the establishment of a tannery at Pretoria showed that a most profitable business could be established for the purpose of treating the raw hides, sheep and goat skins, which are so plentiful in this country. For years a most remunerative export trade had been carried on in hides, these being sold in their raw state at from 6d. to 7d. per pound, and returned here either in the shape of butts at 2s. 6d. to 2s. 7d. per pound, or as manufactured leather goods. The report showed that wattle bark and the materials for treating leather are obtainable here in as large and cheap quantities and of the same quality as those used elsewhere, and with up-to-date machinery and the employment of skilled workers a successful industry could be established. The investigations of the committee in regard to the possibility of establishing a woollen industry at Pretoria led them to the conclusion that woollen goods could be manufactured here as advantageously as oversea; that the importation of expert workers was a sine qua non in the establishment of such an industry. The report of the subcommittee was adopted, and the thanks of the association were tendered the members of the committee for the work they had done.

A system for the economical and comfortable working of deep mines is claimed by Herr Dietz, a German engineer, from the use of an improved method of cooling the air by means of the expansion of dried compressed air. Temperature, of course, increases with depth, and, in many German mines, with the heat considerably above 80 degrees F., miners are not able to work more than six hours at a shift. Costs are thus greatly increased, and the yield is diminished. In the new cooling process, air is compressed and put through a drier at surface.

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Automobile Notes.

To Locate a Leak.

Sometimes it is difficult to locate a leak in the radiator, although the driver may have searched assiduously for it without actually dismounting the tank. As it is not a very serious (unless the leakage is rapid) or a dangerous defect, motorists frequently neglect it, and fill up the radiator oftener. Still, the dripping, tending also to accumulate dust, is unsightly, and as a last resource the plumber's smoke test may be made by forcing smoke into the radiater by means of a tyre-pump, and preventing its escape by any other means than the small leak. A solution of strong ammonia water and hydrochloric acid is utilised to generate the smoke used.

Asbestos Washers.

In putting asbestos or fibre washers on cylinders or crank cases, be sure that they are not too thick. If too thick washers are put under the cylinders, the compression will be lessened slightly, and, what is more serious, the distance between the valves and camshaft will be increased, resulting in excessive clearance of the stems and consequent interference with the timing of the valves. These two changes, the slight one in the lessening of the compression and the larger one of the alteration of the timing, may result in considerable loss of power. In case the washers are put between the two halves of the crank-case, only the compression may be altered, assuming that the case is split in the centre line of the crank shaft. In this case, care should be taken to see that the washer does not interfere with the fitting of the crank-shaft bearings.

Tyres and Economy.

If the car-owner is at all interested in the study of true economy in motoring, there is no part of the vehicle demanding greater attention than the tyres, especially regarding correct inflation. But it is not every motorist who seriously considers this very important matter. There are two extremes which have to be avoided, and a happy mean to be secured. There is under-inflation, which too often is the condition in which the tyres are used! And there is over-inflation, which is often resorted to in a haphazard sort of way, as being better than the other extreme. More often than not tyres are used in an under-inflated state, because, when the car is taken out of the garage unloaded, the tyres appear to be sufficiently inflated. Even if there is a suspicion that they have lost pressure, there is always a temptation to shirk the work of pumping-up—a task that is never very appealing. Hence the car is loaded, and the tyres used, quite irrespective of correct inflation, according to load carried. Under such treatment the best results cannot be expected, and are not obtained. The rapidly rising cost of petrol attracts universal attention, and columns are written about it in the various papers, as a grievous tax on the motorists' pocket, and a serious addition to the cost of motoring, yet the influence of tyre inflation upon running cost, which may have even a greater effect than a rise in the price of petrol, is either not recognised, or, if appreciated, almost entirely ignored. As it is rarely possible to tell exactly whether there is sufficient air in the tyres, the practice of carrying a tyre-pressure gauge, and of using it, too, is to be commended.

The honour of representing the French Chamber of Commerce of Montreal at the Imperial Motor Transport Conference, recently held in London, fell upon Mr. Frank Beecher, of the Michelin Tyre Company. The principal object of the conference was, as already noted in this column, to increase the general knowledge throughout the Empire of the enormous possibilities of motor transport for a great variety of trade and industrial purposes; also to bring about a better understanding of local requirements and the desirable methods of doing business between the manufacturer and the potential user. After the formal opening of the conference, the subject of petrol substitutes was discussed, and a paper on the subject by Sir Boverton Redwood was read. In the course of his remarks he gave it as his opinion that, in studying the question of motor spirit, one is led to the conclusion that the carburettor, which is the all-important factor, has received a smaller amount of attention than it deserves, and that much may yet be done in the direction of making carburettors better adapted for use with the heavier grades of petroleum products. It must be borne in mind, he said, that any petrol substitutes made from petroleum coal or shale are only

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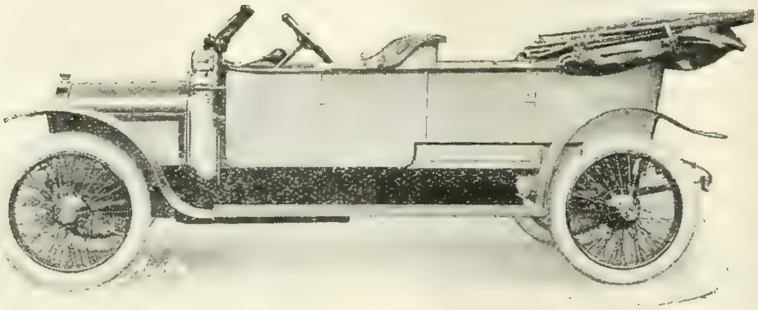

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obtainable in a limited quantity, for in each case the raw material is in process of depletion. On the other hand, alcohol is a motor spirit which can be continuously manufactured in any required quantity, and if the Imperial Motor Transport Conference only realises this fact, and uses its influence in the first place to stimulate the designing of an engine and carburettor best fitted for use with this liquid. and, secondly, to induce the Government to give the necessary facilities for the manufacture and use of methylated spirit for the purpose, it will have done much towards giving this country a home-produced source of power of which no foreign entanglements can rob us.

By fermentation in bulk, continuous distillation, and judicious methylation, he continued, all the motor spirit needed can be obtained and sold at something like 1s. per gallon. The extended researches of the United States Government have shown that engines can be satisfactorily run on alcohol, whilst, in spite of the calorific inferiority of alcohol, practically the same power is generated as with petrol, owing to the cooler cycle, smaller quantity of air required, and greater compression that can be used without fear of pre-ignition. At the end of the discussion the following resolution was unanimously carried: "That having regard to the high price of petrol and the limited quantities of petroleum, coal and oil shale available, and the obvious fact that these sources of volatile liquid hydrocarbons are in course of depletion, it is desirable that attention should be directed to the construction of a motor suited for use with alcohol, and that, concurrently, action should be taken with a view to the ultimate creation of an adequate supply of fuel obtainable at a sufficiently low price." A proposal that an adequate amount of spirit could be obtained from coal tar oil was rejected.

The commonsense view taken by the chairman of the Highgate Bench, Sir Alfred Reynolds, in dealing with an application of the police for a summons against a motorist for exceeding the speed limit over a measured distance of 220 yards on an open road, was expressed in the following terms: "It is absurd. I am not a motorist myself, so I am not speaking out of sympathy for them. Only on Wednesday I had a case where a young man was riding on North Hill early on Sunday morning at a speed of 26 miles an hour. I do not suppose he knew whether he was going 19 or 25 miles in such a short distance. It is a monstrous thing to time a man over such a short distance. Where there is danger there should be a prosecution, but in this case there was no traffic and no people about. I wonder the police waste their time harassing people so. They should use discrimination.'

The English riders' prowess in hill-climbing was responsible for the British victory in the Anglo-Dutch trial in England. The Dutchmen, being only accustomed to the flat roads of Holland, failed repeatedly on the rough, narrow tracks up and down the Chiltern Hills, which were a feature of the trial. Their machines were reliable enough, and, had the hills been easier, they might have repeated their victory of last year. As it is, however, honours are easy, each team having secured one victory.

Frictional transmission has many devotees in the cycle-car world, and it has now been applied to a motor cycle. The device consists of six discs of varying circumferences, and is divided up as follows. One on the engine main shaft, a large one on the back wheel and four smaller, coming in contact with these. The small discs are carried on shafts working in a slide rest, and are situated on either side of the main discs. The revolution of the engine disc sets the smaller ones in motion, and so transmits the power to the back wheel. These small discs are free to move backwards and forwards along the slide rest, being operated by a hand lever at the side of the tank, by this means giving a variety of gears varying from 2 to 1 to 10 to 1. The machine has been running about six months, and has proved most efficient, no trouble being experienced with slip. By reason of its simplicity it is fool-proof, and will stand any amount of rough handling.

In the course of his annual report, the Government Mining Engineer says: A draft Motor Car Bill was prepared by the Department last year. The necessity for this Bill has become apparent from the great increase in motor traffic throughout the Union. The motor car industry is likely, to a far greater extent than is generally realised, to affect transport questions throughout the civilised world and more especially in this country, where immense distances separate the centres of population, and where there are often other difficulties besides mere distance which render animal transport uncertain, such as disease, lack of food, and want of water on many roads. From a mining point of view motor car transport is likely to become increasingly efficient, and even to-day wherever one travels off the main lines of rail or post roads the increase in motor traffic and the general improvement of the conditions of life

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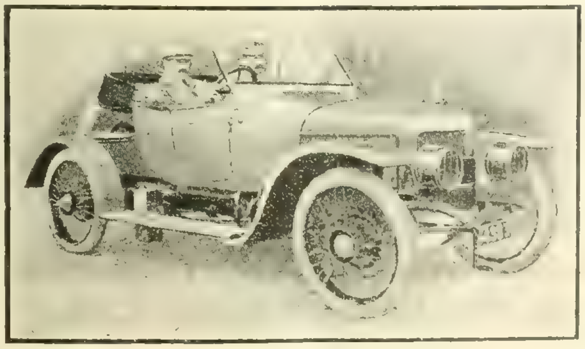

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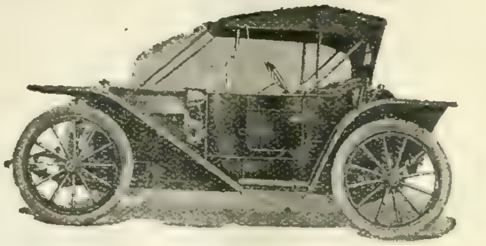
and reduction of time and cost of transport, due to better communications resulting from the presence of the car, are most noticeable. While many of the more remote farmers fear the competition of the motor car and think it will adversely affect the value of their transport animals, in many districts the car is now welcomed. It is not always easy to explain that the introduction of machinery in any class of human activity merely means a readjustment into which the older methods will speedily fit themselves, and it must be expected that in many districts for some time to come the motor car will be regarded with some suspicion and even dislike. The favourable reception of the car and its occupants largely depends on the tact and reasonableness shown by the driver. A certain class of hired driver who pays no attention to restive horses and who drives furiously through small villages and in the neighbourhood of farms is still too common. The rapid increase in the importation of motor cars, the considerable number of accidents which have been registered in the last two years, and the rapid cheapening of the car by European and American makers all render it necessary and desirable that simple but effective legislation should be passed as soon as possible to control the development of this class of traffic. The two means of control which are most necessary are: (1) The property registration and licensing of cars; and (2) the licensing of drivers and persons entitled tó drive. The necessity of controlling persons allowed to drive cars has been apparent as a result of certain accidents in which persons were found to be driving cars on public thoroughfares who had no experience or knowledge fitting them to be in command of a machine so dangerous to life and limb, and persons should only be allowed to use the roads in fast-moving vehicles who are competent to deal with the situations which may at any moment arise. The Government, being convinced of the necessity for uniformity of legislation in the various Provinces in order to encourage the growth of motor car travelling in the country, had proposed that the Bill should be passed by the Union authorities, the administration of which should be carried out by the Provinces themselves. Owing to the pressure of Parliamentary business, however, it was decided finally during the year to ask the Provincial Governments to pass the necessary legislation, and copies of the draft Bill were forwarded to the Administrators with the request that, as far as possible, the Ordinances should be passed in their Councils on the lines of the Bill, with only such amendments as might be proved necessary in detail for each particular Province. The lines of the Bill have been made as fair as possible to the motor car industry, of which much may be expected in the assistance which it will give to the development of the country. The terms are at the same time sufficiently strict to satisfy the road-using public in general. Extensive experiments were made with reference to the minimum rates which were desirable within towns before dealing with the question of speeds in traffic, and the result is that somewhat higher limits have been placed than might have been anticipated, it being found that the average car is more amenable at a rate of 20 miles an hour than at a rate of five or six, which has been the limit in some places. Insistence on very slow rates of driving not only blocks the traffic, and thereby causes dangers of another kind, but also unnecessarily handicaps the car in its manoeuvring power. A great deal of assistance was received from the various motor car and automobile clubs of South Africa, and the thanks of the Department are due to the officials of these clubs for the considerate advice and assistance which was given in the early stages of drafting the Bill. These remarks specially apply to the Transvaal Automobile Club, the Royal Automobile Club of Capetown, the Natal Automobile Club, and the Eastern Province Automobile Association, all of whom have shown that nobody is more interested in the proper control of motor car traffic than the members of the responsible clubs throughout the country. The Department also received much assistance from the Administrators and Secretaries of the various Provinces.

The R.A.C. have already received a pair of entries for the Tourist Trophy Race of 1914—though the conditions are not yet known—and appear to have some hope of carrying it through. Whether they succeed or not depends upon the attitude of the manufacturers. These may be divided, broadly, into two classes. Those who have already established their reputations on road and track, and are reaping thereby their commercial reward, and those who are anxious to do so. The former have much to lose and little to gain by entering into fresh competitions, while the reverse is the case with the latter. If the latter are sufficiently strong to ensure the necessary number of entries, the race will in all probability be held, otherwise it is doubtful.

Several American motor cars for 1914 are being fitted with the Vulcan electric gear change. The operating board of the device is attached to the steering column under the steering wheel, and it manipulation is thus described: No matter at what speed the car is travelling, by pressing the button indicating reverse and pushing out the clutch as the car comes to a stop, it engages the reverse gear; letting in the clutch in the usual manner reverses the direction of the car. By depressing the button marked "neutral," all the button are released, and by depressing the clutch pedal the gears are brought to neutral. It is absolutely impossible to have ore than one push button depressed at the same time. By the interlocking arrangement, any button that is depressed is released when another button is depressed. No clashing of gears is possible.



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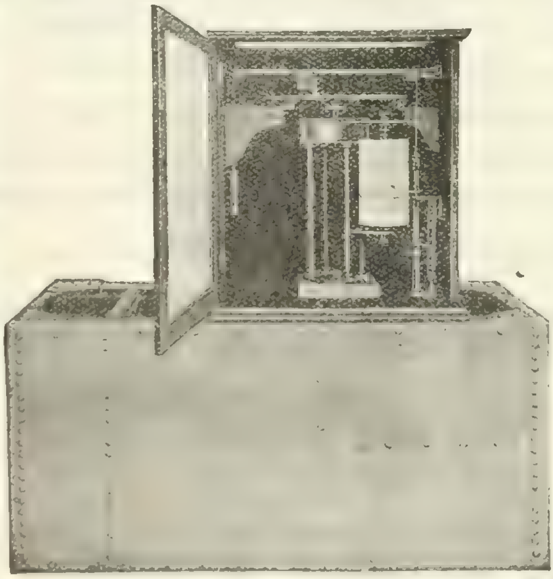

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QUARTERLY REPORTS.

Transvaal G.M. Estates.

The report for the three months ended the 30th of June of the Transvaal Gold Mining Estates, Ltd., embraces the financial position of the company as at the 30th of June, as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, £34,975; and cash at bankers and value of gold in transit, £147,016. The liabilities are: Five per cent. first mortgage debentures, £94,664. Sundry creditors on account of dividends, stores, wages, Government tax, etc., £35,648; and the balance brought from appropriation account is £140,153. Working revenue and expenditure account received from gold realised from Central Mines, £111,839, or 58s. 6·6d. per ton; from Elandsdrift Mine, £8,056, or 82s. 2·4d. per ton; and from Vaalhoek Mine, £6,484, or 29s. 1·7d. per ton. Working expenditure absorbed at the Central Mines, £40,244, or 21s. 0·8d. per ton; at Elandsdrift Mine, £2,844, or 29s. 0·2d. per ton; at Vaalhoek Mine, £4,321, or 19s. 5d. per ton. After deducting these sums the working profits for the quarter were: Central Mines, £71,595, or 37s. 5·8d. per ton; Elandsdrift Mine, £5,212, or 53s. 2·2d. per ton; Vaalhoek Mine, £2,163, or 9s. 8d. per ton. Profit from accumulations brought in £1,708; sundry revenue, £1,050, and interest £984, making together a total of £82,712. Against this total is charged: European and head office expenses, £3,585; and debenture interest, £1,196. The balance of profit for the quarter, £77,931, is carried to appropriation account. The balance of working expenditure and revenue account at the 31st of March was £82,671, making, together with the balance of receipts for the three months ended the 30th of June, a total of £160,602. The charges against this sum are: Government tax (estimated) for three months, £7,072; funds transferred on property equipment, £2,563; debentures purchased during quarter, £10,778; dividend account, £36. Capital expenditure amounted to £2,563, leaving about £100 to be spent on open votes. The tonnage crushed was: Central Mines, 38,200 tons; value of ore before crushing, 63s. 2·7d. per ton. Elandsdrift Mine, 1,960 tons; value of ore before crushing, 84s. 1·4d. per ton. Vaalhoek Mine, 4,450 tons; value of ore before crushing, 36s. 0·3d. per ton. The working profit for the quarter was the highest yet realised by the company, being £2,491 greater than that of the previous quarter. This result is chiefly due to the large tonnage drawn from Duke's Hill South Mine, which has completely fulfilled the expectations formed regarding it, referred to in previous reports. The development footage decreased by 647 feet compared with the previous quarter, owing to the scarcity of native labour experienced. The general manager points out that it is only owing to the great width of the Duke's Hill South stopes that he has been able to maintain so satisfactorily the ore for the mill at the Central Works. The most important development at the Central Mines was that carried out in the ground intervening between the Duke's Hill South Mine and the Peach Tree Mine, Columbia Hill side. The general manager reports that the main feature of this development, and the most pleasing, was the extension of the payable zone in the Duke's Hill channel towards the dip. The three drives developing this ore body to the dip, the first of which had extended 800 feet across the channel, are still developing good reef above the average value of the mine. The adit, which is half-way between the Duke's Hill Mine and Columbia Hill, has only to be driven a distance of 270 feet to connect with the main drive in Duke's Hill South. When this connection has been made, mining conditions there will be further improved. The drive off this adit, which is to connect these workings with the first drive coming from Columbia Hill, has still to be driven a distance of 340 feet, the second main drive from Columbia Hill to Duke's Hill a distance of 690 feet, while the two faces of the third main drive are still a distance of 970 feet apart. The whole of this extensive and very important development was outlined in the general manager's annual report, in dealing with the Peach Tree Mine, and the situation remains much the same as therein reported. The general manager reports that the development of the Peach Tree Mine shows signs of improvement, while the positions of the Graskop, Theta and other mines do not call for special comment. No fresh calculations as to the ore reserves have been made since the compilation of the annual report, but the general manager states that, as far as he can judge, the position of the reserves during the quarter has not undergone any change. Had the labour position been more satisfactory, he has no doubt that the quarter would have shown an improvement in the reserves. At Elandsdrift operations are continuing as usual. The dip section is continuing to open up fairly satisfactorily. At Vaalhoek on the 31st of May there was an inrush of water at the river section. Additional pumping plant has been provided, at a cost of £300. The usual profits were not interfered with, however, owing to the ore drawn from the hill and dyke sections. The river section is now being dewatered, and it is expected that operations there will soon be renewed as usual.

Nourse Mines.

The report of the Nourse Mines for the three months ended the 30th of June sets out the estimated financial position of the company as at the 31st of March, as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. In the interim (abridged) balance sheet on the credit side sundry assets—shares, stores, livestock, furniture, sundry debtors and payments in advance—stand at £41,427, and cash on deposit at bankers, and value of gold in transit, £[illegible]. The liabilities are: To the Government annuity account, £21,352; to sundry creditors for dividends, stores, wages, Government tax, etc., £143,744; and the balance brought from appropriation account is £104,547. In working expenditure and revenue account the receipts from gold are £236,582, or 30s. 8d. per ton milled. The total working expenditure was £171,184, or 22s. 2d. per ton, which left a working profit of £65,668, or 8s. 6d. per ton. Sundry revenue brought up £1,011, and profit on treatment of accumulated slimes, £1,049, making the total for the quarter £67,728, against which there is a charge for Miners' Phthisis Act Compensation Fund, £2,633, leaving the amount carried to appropriation account £65,095. The interim appropriation account (subject to amendment) takes in a balance from the 31st of July, 1912, of £28,424, balance of expenditure and working account for the eight months ended the 31st of March, £185,567, and for the three months ended the 30th of June, £65,095, and forfeited dividends £69, making a total of £279,155. The charges against this total are: Government tax (estimated) for eleven months £22,841, and dividends in January £82,782, and in June £68,985. The balance of £104,547 is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The expenditure for the eleven months ended the 30th of June—£16,263 for new construction, development and equipment, and £1,496 in respect of undermining rights annuity—has not yet been appropriated. The amount to be transferred from appropriation account will not be determined till the end of the financial year and after it has been decided what dividends are to be declared. On development work 8,169 feet were driven, sunk and risen, exclusive of stopes. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,040 feet; width, 14 inches; assay value, 49s. 10d. Main Reef Leader: Distance exposed, 1,895 feet; width, 14 inches; assay value, 74s. 9d. South Reef: Distance exposed, 2,610 feet; width, 19 inches; assay value, 49s. 10d. The reduction works crushed and treated 154,300 tons. The value of ore before crushing (as reflected by mill yield and value of pulp) was 31s. 6d. The total yield was 56,250 ozs. fine, the total yield per ton being 30s. 8d. The development footage at 8,169 feet was very satisfactory, particularly as the mine is short of natives. The total cost of development was charged against the working costs for the quarter. Shaft sinking progressed favourably. The South Nourse incline was sunk 198 feet, the west incline 185 feet, and No. 4 incline 55 feet. The tonnage which became ready for valuation during the half-year ended the 30th of June, 1913, and was disclosed as developed, amounted to 469,868 payable tons, of an average stope value of 30s. 8d. per ton. The expenditure on equipment for the quarter

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amounted to £1,687. A further amount of £6,502 will be required to complete the present capital expenditure authorised. Towards the end of June, strikes having taken place elsewhere, two separate deputations of white employees interviewed the manager and informed him that the men had had meetings among themselves, and wished him to know that they had no grievances whatever as between themselves and the management of this mine, but that they sympathised with the strikers. They asked whether, in the event of their being asked to strike and refusing, they could be adequately protected. Early in July, when the unrest was spreading along the Rand, both underground and surface employees held meetings entirely on their own initiative, at which they decided practically unanimously that they were not in favour of a strike. On the 3rd of July, there was a large meeting on the mine, which was addressed by certain well-known strike leaders, one of whom pointed out that while the men on this mine might feel that they had no grievances, this was a class strike and on that score alone they must come out. There was a good deal of opposition when this man closed the meeting by declaring that, whether the men wished it or not, they must strike. He then and there declared a strike as from the morning of the 4th instant. On that day the men turned up for work in full numbers, and were preparing to go below. A mob of men with red flags threatened them and the property with dire results should they persist in doing so. The manager then told our men that as he was powerless to protect them he could not take the responsibility of their going to work under the circumstances. Our men then dispersed quietly. In the same manner, work in the shops had to cease, as the men there were being threatened by an ugly crowd. A deputation of the local Strike Committee visited the manager later, and after expressing their regret that our men should have to be called out on strike, stated that they had been asked to inform him that no damage to life or property would be allowed on the mine, in view of the fact that the men felt that they had received fair treatment. The futility of this offer of protection on their part, after they had created such disorder, was pointed out. In spite of disorder among some of the Kaffirs, a considerable amount of tramming and shovelling was done underground, under the supervision of the staff. The property of the company did not suffer any damage; it was guarded by a force of special constables composed of employees and for a time by police and soldiers. The majority of the men resumed work on the 8th inst. The total number of natives in the service of the company at the end of the quarter was 4,530, as against 4,883 at the end of March. There has been a further wastage of about 200 since the 1st of July. Time-expired natives are not re-engaging in the same proportion as was previously the case, and as the Government has prohibited further recruiting, for the time being, results from present working will show a decrease, but it is not possible at this date to say to what extent, or for what period, profits will be affected. Notification has since been received that the prohibition against recruiting of native labour has been withdrawn. Recruiting has therefore been resumed.

Geldenhuis Deep.

The report for the three months ended the 30th of June of the Geldenhuis Deep embraces the financial position of the company as at the 30th of June as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, £45,061; and cash at bankers and value of gold in transit, £197,140. The liabilities are: Government for annuity account, £18,079; sundry creditors on account of dividends, stores, wages, Government tax, etc., £114,137, and the balance brought from appropriation account is £95,593. Working revenue and expenditure account received from gold realised £259,818, or 29s. 4d. per ton milled. Working expenditure absorbed £206,557, or 23s. 4d. per ton, which left a working profit of £53,261, or 6s. per ton. There is a credit from sundry revenue of £1,514, and a charge for expenditure under the Miners' Phthisis Act of £2,834 against this, which left £51,941 carried to appropriation account. The balance of working expenditure and revenue account at the 31st of December, 1912, was £72,195, making, together with the balance of receipts for the six months ended the 30th of June, £89,153, and forfeited dividends £46, a total of £161,394. The charges against this sum are: Government tax (estimated) for six months, £7,226, and dividend declared in June, £58,575; and the balance, £95,593, is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The capital expenditure for the six months ended the 30th of June—£6,820 on new construction, and £951 in respect of undermining rights annuity—has not yet been appropriation. The amount to be transferred from the appropriation account will not be determined till the end of the financial year, and after it has been decided what dividends are to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 6,241 feet. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,835 feet; width, 21 inches; assay value, 49s. 2d. Main Reef Leader: Distance exposed, 954 feet ; width, 10 inches; assay value, 111s. 4d. South Reef: Distance exposed, 2,080 feet; width, 17 inches ; assay value, 63s. 5d. The tonnage crushed was 176,800 tons. The value of the ore before crushing—reflected by mill yield and value of pulp—was 30s. 8d. per ton. The total yield was 61,743 ozs. and the total yield per ton was 29s. 4d. The total development footage for the quarter was 6,241 feet, as compared with [illegible] feet for the previous three months. Sinking operations were in progress in No. 1 auxiliary shaft, and No. 3 main incline; while the bottom of No. 2 main incline is being cleaned up preparatory to starting sinking. The fan, to which reference was made in the directors' quarterly report ending the 31st of March, 1913, has now been erected at the collar of No. 1 shaft, and is giving complete satisfaction, the ventilation of the lower levels of the east section particularly having been greatly improved. The results for the quarter's operations were satisfactory. No accumulated slimes were treated, owing to the capacity of the reduction plant being served by ore from the mine. The payable ore returned as developed for the half-year ended the 30th of June, 1913, amounted to 128,643 tons, of an average stope value of 36s. 1d. per ton. The capital expenditure was £4,124, and the amount to be spent for the completion of the work authorised stands at £10,546, which includes a sum of £8,710 for the installation of an underground winder, west section, which probably will not be required. Till Thursday, the 3rd of July, the operations of the company were not seriously interfered with by reason of the strike among white employees which had occurred on other mines. On that date the majority of men working underground were influenced by representatives of the strikers, and gave notice that they would cease work in sympathy on the following day, a similar procedure being followed by the surface hands on the 5th of July. The majority of men returned to work on the 8th of July, and the remainder on the 9th. Throughout the period of unrest the property was guarded by a force of special constables drawn from the company's staff, and no damage was suffered. The total number of natives in the employ of the company at the 30th of June was 5,092, against 5,749 for the previous quarter. Time-expired natives are not showing the same disposition to re-engage as previously, and as the Government has prohibited any further recruiting of labour for the time being, future operations will be affected, but to what extent or for what period it is impossible to say at this date. Notification has since been received that the prohibition against recruiting of native labour mentioned in this report has been withdrawn. Recruiting has therefore been resumed.

Knight Central.

The report on the operations at the Knight Central for the three months ended the 30th of June states that from 76,570 tons milled 20,203·374 ozs. of gold were obtained, the estimated value of which was £84,824, equal to 22s. 1·87d. per ton. The total costs were £75,669, or 19s. 9·18d. per ton, which left a profit for the quarter of £9,154, or 2s. 4·69d. per ton. The capital expenditure over the pediod was £10,971. On shaft sinking and stations work the east shaft was sunk 22½ feet to a total depth of 4,596 feet, and the west shaft 72½ feet to a total depth of 4,458½ feet, and timbered to 4,325 feet. On development—driving, winzing, raising, etc.—2,753½ feet were accomplished. On reef south of the dyke the crosscut from the east shaft at the 16th level is 254 feet in, and there remains approximately 320 feet to reach the South Reef. The crosscuts through the dyke on the 13th and 14th levels at the west shaft and on the 15th level at the east shaft reached the South Reef at 590, 490 and 706 feet respectively. The Main Reef where struck in the crosscuts proved unpayable in each case, and driving was commenced on the South Reef. Altogether, 355 feet of this reef, averaging 3·1 dwts. over an estimated stoping width of 63 inches, have been sampled to date. This footage includes the following payable stretches, viz.: On 13th level 10 feet averaging 4·5 dwts. over 38 inches; on 14th level 75 feet averaging 5·3 dwts. over 67 inches; and on the 15th level 60 feet averaging 4·5 dwts. over 60 inches; the total payable reef so far exposed being 145 feet (or 41 per cent. of the length exposed), averaging 4·8 dwts. over an estimated stoping width of 62 inches. Reef Values: Exclusive of main crosscuts, ore passes and prospecting work, 1,725 feet, or 88·89 per cent. of the development work, has been on reef. Altogether, 1,600 feet have been sampled. This comprises 730 feet, or 45·6 per cent., averaging 7·6 dwts. over an estimated stoping width of 51 inches, and 870 feet, or 54·4 per cent., averaging 2·7 dwts. over 54 inches. The ore reserves, as completely re-estimated at the end of June, are as follows: 240,800 tons Main Reef at 6·4 dwts. over 62 inches; 338,200 tons South Reef at 6·0 dwts. over 60 inches; 7,600 tons Main Reef Leader at 8·5 dwts. over 38 inches; total, 586,600 tons of ore at 6·1 dwts. over 61 inches. Pending further information, no ore south of the dyke has been included in the above estimates.

Durban Roodepoort Deep.

The report for the three months ended the 30th of June of the Durban Roodepoort Deep embraces the financial position of the company as at the 30th of June as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £17,343, and cash at bankers and value of gold in transit, £46,644. The liabilities are sundry creditors on account of loans, dividends, stores, wages, Government tax, etc., £57,332, and the balance brought from appropriation account is £13,677. Working revenue and expenditure account received from gold realised £117,878, or 29s. 5d. per ton milled. Working expenditure absorbed £94,606, or 23s. 7d. per ton, which left a working profit of £23,272, or 5s. 10d. per ton. There is a charge for sundry expenditure against this working profit of £227, and under the Miners' Phthisis Act Fund of £1,162, which left £21,883 carried to appropriation account. The balance of working expenditure and revenue account for the previous three months was £23,272. The charges against this sum are: Government tax (estimated, for six months), £3,507; interim dividend, £22,000; and the balance, £13,677, is carried to the balance sheet, as stated above. The credit balance of appropriation account is not wholly available for distribution. The amount of liability at the commencement of the financial year (£4,406), together with capital expenditure for the six months ended the 30th of June (£7,065), has not yet been appropriated. The amount to be transferred for appropriation account will not be determined until the end of the financial year, and after it has been decided what dividend is to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 3,570. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,490 feet; width, 27 inches, assay value, 45s. 4d. South Reef: Distance exposed, 1,160 feet; width, - inches; assay value, 179s. The tonnage crushed was 80,050 tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 30s. 1d. The total yield was 28,070 ozs. fine gold, and the total yield per ton was 29s. 5d. No ore was fully developed and valued for the half-year, though the ore exposed by driving is normal in both value and tonnage. The development footage for the quarter shows an increase of 81 feet. Disclosures on both reefs are again satisfactory, and considerably improved values have been obtained in one of the winzes on South Reef, below the 11th level, at the east end of the mine, mentioned as giving low results in the last report. The balance in credit to development redemption account now stands at £4,450, and is an increase of £2,547 when compared with the end of March. Working costs continue to be charged with 3s. per ton milled for development redemption. The tonnage milled shows an increase of 4,930 tons, and the costs a reduction of 1s. per ton. The profits at £23,272 are an increase of £3,737. The capital expenditure for the quarter, after making a small adjustment for sales of equipment, was £5,707, and a sum of approximately £3,799 still remains to be spent on authorised votes. The completion of the new mine pumping scheme is approaching, and it is hoped that this plant will shortly be at work. The additions to the slimes plant have been completed, and the enlarged plant is now in commission. The result of a ballot taken on the 2nd of July by this company's white employees showed that a large majority were not in favour of a strike, and were perfectly satisfied with the conditions of employment offered by this company. The workmen do not appear to have had any grievances, nor would they have ultimately struck work had it not been that they were subjected to threats, and it was not possible to afford adequate protection. Labour agitators addressed the men in public meeting, and, as a result, underground employees gave 24 hours' notice on Thursday, the 3rd of July. Workshop and surface hands worked till noon on the 4th, when a deputation was sent to the manager, advising that they had been threatened and therefore had decided to strike. Engine drivers remained at their posts, but did not hoist any rock, and the pumping plant was kept working without any difficulty. Milling was suspended for three days fifteen hours, normal conditions prevailing on Tuesday, the 8th of July. No difficulty was experienced with the handling of the natives, but the native force is much less than the requirements of the mine demand. There were 2,895 natives in our employment at the end of March, and this number was reduced to 2,665 at the end of the second quarter. Time-expired natives are not re-engaging for further service as formerly, and, as Government has prohibited further recruiting for the time being, a temporary restriction of operations may be expected. Notification has since been received that the prohibition against recruiting of native labour mentioned in this report has been withdrawn. Recruiting has therefore been resumed. Working costs for the month of July will be above the average, on account of decreased tonnage and abnormal change, and the expenditure incurred in protecting and insuring the property.

City Deep.

The report for the three months ended the 30th of June of the City Deep embraces the financial position of the company as at the 30th of June as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £45,930, and cash at bankers and value of gold in transit, £343,104. The liabilities are: Government annuity account, £111,520; sundry creditors on account of loans, dividends, stores, wages, Government tax, etc., £203,174; and the balance brought from appropriation account is £129,164. Working revenue and expenditure account, received from gold, realised £234,897, or 37s. 9d. per ton milled. Working expenditure absorbed £159,843, or 25s. 8d. per ton, which left a working profit of £75,054, or 12s. 1d. per ton. A profit of £2,737 from treatment of accumulated slimes was made. There is a charge for sundry expenditure against this working profit of £236, and under the Miners' Phthisis Act Fund of £1,586, which left £75,969 carried to appropriation account. The balance of working expenditure and revenue account brought forward to the 31st of December was £109,001, and for the last six months ended the 30th of June £159,642, making a total of £268,643. The charges against this sum are: Government tax (estimated, for six months), £14,479; interim dividend, £125,000; and the balance, £129,164, is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The amount of capital expenditure for the six months ended the 30th of June (£29,818 on new construction, etc., £19,415 on property, and £3,280 in respect of annuity for undermining rights) has not yet been appropriated. The amount to be transferred for appropriation account will not be determined till the end of the financial year, and after it has been decided what dividend is to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was £5,329. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,410 feet; width, 29 inches; assay value, 16s. 2d. Main Reef Leader: Distance exposed, 2,200 feet; width, 17 inches; assay value, 163s. 6d. The tonnage crushed was 121,[illegible] tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 38s. 11d. The total yield was 55,797 ozs. fine gold, and the total yield per ton was 37s. 9d. The total footage accomplished for the quarter was 5,329 feet, as compared with 3,775 feet for the previous three months, an increase of 1,554 feet. Driving in the upper levels has continued to disclose Main Reef Leader of good grade. A start was made with the sinking of the ventilation shaft, which is 18 feet in diameter, and 66 feet were sunk. No. 1 vertical shaft was also deepened 51 feet, making its total depth, below the 9th level, 145 feet. At No. 2 shaft, the east incline was sunk 195 feet, and the west 129 feet. The ore which became ready for valuation and was declared as developed for the half-year ended the 30th of June, 1913, amounted to 97,520 payable tons of exceptionally good grade, namely, 58s. 10d. per ton. In addition to this tonnage, it is estimated that 136,000 tons of payable ore have been exposed, which will be valued and credited to development when fully blocked out. The capital expenditure for the quarter amounted to £35,588, and the amount still to be spent on authorised votes is £[illegible]. The schedule provides for the cost of sinking and surface equipment of the new circular shaft, which will be spread over approximately two years, a portion of which amount will be provided from the proceeds of the sale of claims to the City and Suburban G.M. and Estate Co., Ltd. The effect of the strike of white employees on the Eastern Rand did not manifest itself on this company's property till the morning of the 4th of July, when 306 underground, 100 surface hands, and all mechanics came out on strike. Drivers, firemen and pumpmen remained at work until 7 p.m. on the 5th of July, when they ceased work until 2 a.m. on the 6th. The majority of the reduction works employees showed a general feeling of loyalty towards the company, but the mill was stopped from 2 p.m. on the 4th until 2 p.m. on the 8th of July. No damage was done to the property, which was guarded by a force of special constables recruited from the staff and employees. The native labour supply is unsatisfactory. On the 31st of March there were 4,434 natives in the company's service; on the 30th of June, [illegible]; and on the 29th of July, [illegible]. Time-expired natives are not re-engaging in the same proportion as formerly, and as Government has prohibited further recruiting for the time being, there is virtually no possibility of replacing the wastage, which, under the circumstances, is likely to be greater than usual. The decrease in the native force, less of milling time, and increased expenditure due to the strike will have the effect of temporarily reducing profits, but to what extent or for what period it is not possible at present to predict. Notification has since been received that the prohibition against recruiting of native labour mentioned in this report has been withdrawn. Recruiting has, therefore, been resumed.

New Kleinfontein.

The report on operations at the New Kleinfontein for the three months ended the 30th of June states that from 106,500 tons of ore milled, the estimated value of the gold won and realised, less valuation charges, was £154,548, or 29s. 0·277d. per ton. Working expenses were £109,017, or 20s. 5·678d. per ton, which left a net working profit of £45,531, or 8s. 6·604d. per ton. In the mine 423 feet of shaft sinking was accomplished; on development work 2,486 feet were driven, risen and sunk. The footage sampled was 1,735 feet, the average milling width being 54·46 inches, of an average assay value of 7·56 dwts. The estimated tonnage of ore exposed by drives was 83,108 tons. The capital expenditure for the quarter was £[illegible]. The ore reserves at the 30th of June were:—Payable, 1,174,463 tons; milling width, 45·75 inches; value, 7·7 dwts.; unpayable, 511,323 tons; milling width, 45·55 inches; value, 3·64 dwts.; total, 1,685,786 tons; milling width, 45·63 inches; value, 6·47 dwts.

Is it really possible in this age of discontent to have a body of satisfied workers? asks a writer in the *Engineering Magazine*. Is there not in progress a real struggle for survival, between the owner on the one hand and the worker on the other? Both enquiries will continue to be variously answered in the future as they have been in the past. The problem of the present, however, is to manufacture economically and to serve public and wage-earners righteously. And until every available means to these ends has been exhausted, the employer cannot claim the full performance of his task. It is a truism that a discontented employee is a heavy tax on the resources of any factory; and, conversely, contentment is an asset which is well worth a heavy investment to obtain. In no direction can that investment be made to better advantage than through a systematic campaign to elevate the worker by making his task more appealing, his occupation more promising, and by developing his capacities so that they may be used to his greater benefit. One point remains to be noticed. It is still a universal custom to discharge employees for a variety of offences, or to permit them to resign because of some petty grievance. In either case the vacancy is filled by someone who is in all probability no more competent than his predecessor, and who, it is likely, is less familiar with the duties of the position. The practice is dangerous, and needs to be guarded against. A well-ordered system of discipline is amply sufficient to meet the necessities of nine-tenths of the cases which are said to merit discharge; and it is generally worth while to make some effort to remove the petty grievance under which a disgruntled worker believes himself to be labouring. Tactful management should not be averse to the investigation of all such cases by a committee of the men themselves, subject to some formal review of the recommendations which result.

INVESTORS' DIARY.

The following company meetings have been announced:

Sept. 9.—Coronation Collieries.
Sept. 12.—Swaziland Tin.
Sept. 19.—Transvaal Gold Mining Estates (special).
Sept. 19.—Transvaal Gold Mining Estates.
Sept. 26.—Simmer and Jack Prop.
Sept. 26.—Sub-Nigel.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.

New Patents.

338. (1) Wm. Blane Dodds, (2) David Charles Bowen.—Improvements in linings for the ends of tube mills and the like.
339. Gaston Jacquier.—Improvements in the precipitation of metals from solutions of their salts and apparatus therefor.
340. Evan Williams.—Improvements in means for collecting debris and dust produced in the operation of rock drilling machines and the like.
341. (1) Urlyn Clifton Tainton, (2) Malcolm Foerster.—Improvements in the electrolyte recovery of metals from their solutions and in apparatus therefor.
342. (1) James Dunlop Wilson, (2) Maurice Selvie Aaron.—Improvements in safety catches for mine skips and cages, hoists and the like.
343. Thomas Hawkins.—Improvements in the manufacture of explosives of the sprengel class.
344. Arthur Cecil Thornton.—Toilet antiseptic paper.
345. Alexander McNamora.—Improvements in and in connection with rotary drills.
346. Percy Herbert Benjamin.—An improved adjustable rim or emergency wheel for use with motor driven vehicles and the like.
347. Ingo Emmanuel Kohlmeyer.—Improvements in and relating to rotary mills for reducing ore and other materials.
348. Louis Eugene Barbedienne.—Improvements in vehicle wheel rims.
349. A. Macgregor Ritchie.—A new combination forming a material for use in forming ceilings covering partitions and the like.
350. Alexander Purser.—Improvements in valves.
351. George Alfred Jubius.—Improvements for issuing tickets and for computing and indicating the totals of issues.
352. George Harold Leeney.—Improvements relating to ventilators for buildings.
353. (1) Otto Bernard Blackwell, (2) Gustavus Adolphus Anderegg.—Improvements in methods of reducing telephonic disturbances.
354. Charles Lester.—An improved valve for pumps and the like.
355. Walter Edward Letty.—Safety shield to high tension overhead transmission towers.
356. Hubert Vincent Blake.—Improvements in hydraulic rams.
357. Allan McKechnie.—Improvements in paints.
358. George Stott.—Improvements in rollers for mine shafts, haulage ways and the like.
359. John Harbottle.—Improvements in rope sheaves, rope pulleys and the like.
360. (1) Richard Colson, (2) Frank Percy Hitchcock.—Improvements in windmills and the like.
361. Wm. George.—Improved explosive cartridge.
362. Frederick Lamplough.—Improvements in or relating to a process and apparatus for the conversion of heavy hydrocarbons into lighter hydrocarbons.
363. (1) The British Cyanides Co., Ltd., (2) Edmund Charles Rosseter.—Improvements in the manufacture of sodium alloys.
364. (1) Societe Generale des Nitrwres, (2) Paul Bunet.—Improvements in the manufacture of aluminium nitride and other operations in electrical furnaces.
365. Phillip Arthur Whear.—Improvements in work drills with detachable bits.
366. Harry Phillips.—Improvements in cartons for cigarettes and the like.
367. Edward Oscar Ord Christopherson.—Improvements in bearings of truck wheel axles.
368. Lancelot Ussher.—Improvements in cocks for water sprays and the like.
369. John Evans.—An improved process for converting fine coal into marketable fuel.
370. (1) Neston Gabriel Auguste Marie Joseph Champy (2) Leon Paul Alexandre Champy.—Process of and relating to the preparation of material for filling receptacles intended for storing explosive gases.
371. Oscar Schulter.—A process and apparatus for melting in the holder wires for the supporting frames of metal filaments or metal wire lamps.
372. (1) Richard Fredrick Hermann (2, Dr. Ing, Erick Philippi.—A switch gear for several conductors, machines or apparatus to be connected to one and the same nar the said conductors or machines being switched in and out with the use of one and the same resistance.
373. (1) Emmet Frank Galligan (2) Wm. Henry Galligan (3) Henry Enson Woodward.—Improvements in dust collectors for rock drills.
374. Charles Wesley Jean.—Improvements in presses.
375. Anthoney William Richard Schieder.—Improvements in apparatus for "lashing" or moving broken rock or other material in underground workings of mines or the like.
376. Henry Lethbridge Templer.—Improvements in rock drills with detachable bits.
377. Henry Wm. Rogers.—A new water drill to prevent all dust from the drill.
378. Irving Langmuir.—Improvements in incandescent electric lamps.
379. Wm. Augustus Hall.—Process of desulphurising ore.
380. Wm. Augustus Hall.—Improvements in the art of desulphurising ore.
381. Wm. Augustus Hall.—Improvements in furnaces for decomposing pyrites and other metallic sulphides.
382. The Leeds Forge Co. and Robt. G. Sharp.—Improvements in railway and like wagons.
383. Wm. Miller.—Safety brake.
384. Stephanus Venter.—Improvements in apparatus for recovering precious stones and metals from alluvial and other matter.
385. Frances J. Marquard.—Improvements in the method for fixing galvanised corrugated iron on roof and otherwise.
386. J. Christian Reul.—Chlor petrol.
387. Lewis James Rossiter.—Improvements in valves.
388. Wm. Holman James.—Electro-chemical treatment of metal-bearing material.
389. John Head.—Improved hydraulic press for skins, forage and the like.
390. Dr. Graf Botho, Schwerin.—Improvements in the electro-osmotic extraction of water from animal, vegetable or mineral substances, and in apparatus therefor.
391. Auguste Fernbach and Edward Halford Strange.—Improvements in connection with fermentation processes for the production of acetone and higher alcohols, from starch, sugars and other carbohydriate materials.

New Registrations.

4247. Hart Limited, 165, President Street, Johannesburg; capital, £3,000.
4248. Johannesburg Physical Research Society, 62, Janie Street, Jeppestown, Johannesburg; capital, £100.
4249. South African Dissolved Acetylene, Ltd., National Bank Buildings, Simmonds Street, Johannesburg; capital, £5,000.
4250. Gray and Thom, Ltd., No. 3, Howard Buildings, corner Main and Loveday Streets, Johannesburg; capital, £2,250.
4251. The Mutual Estate and Finance Co., Ltd, 21, Jeppes Arcade, Commissioner Street, Johannesburg; capital, £500.
4252. Ermelo Estate and Coal Co., Ltd., Nos. 16 and 18, Transvaal Bank Buildings, corner Fox and Sauer Streets, Johannesburg; capital, £35,000.
4253. The Krugersdorp Lime Company, Ltd., 95/100, Exploration Buildings, Commissioner Street, Johannesburg; capital, £4,000.
4254. Franco Colonial Co., Ltd., 148/151, Exploration Buildings, Commissioner Street, Johannesburg; capital, £1,000.
4256. The South African Jewish Publication, Ltd., No. 22, Harrison Street, Johannesburg; capital, £1,000.
4257. New North Clewer, Ltd., No. 12, Transvaal Bank Buildings, Fox Street, Johannesburg; capital, £20,000.
4258. Rand Pawnbrokers, Ltd., 56, Sacke's Buildings, Joubert Street, Johannesburg; capital, £100.
4259. The Beta "D" Co., Ltd., No. 5, Breda's Chambers, corner Rissik and Fox Streets, Johannesburg; capital, £1,000.
4261. Asmana and Co., Ltd., No. 7, Jooste and Bryant's Buildings, Commissioner Street, Johannesburg; capital, £2,000.
4263. W. R. Boustred, Ltd., No. 98, Fox Street, Johannesburg; capital, £20,000.
4264. South African Produce Co., Ltd., 319, Pretorius Street, Pretoria; capital, £750.
4265. Stein's Glencairn Restaurant, Ltd., Glencairn Buildings, Joubert Street, Johannesburg; capital, £1,000.
4266. Bloemhof and District Water and Power Supply Co., Ltd., 12312 Claim, Bloemhof Town Lands Diggings, Bloemhof; capital, £3,000.
4268. W. Zinn and Co., Ltd., Erf No. 128, King Edward Street, Potchefstroom; capital, £4,400.
4269. African Films Trust, Ltd., Empire Buildings, corner Kruis and Commissioner Streets, Johannesburg; capital, £45,000.
4270. Catherers, Ltd., Henley-on Klip; capital, £100.
4271. M. F. Sherwell, Ltd., Stand No. 81, Fox Street, Marshall's Township, Johannesburg; capital, £1,500.

FOREIGN COMPANIES.

4255. The Abantu-batho, Ltd., care of D. S. Letanka, Printing Works, Sophiatown, Johannesburg; capital, £3,000.
4260. Sammel Bros., Ltd., care of A. P. Cohen, Stand 102/3, Pim Street, Newtown; capital, £150,000.
4262. W. F. Johnstone and Co., Ltd., care of Charles Hobson Leake, Colonial Mutual Buildings, 78, Fox Street, Johannesburg; capital, £10,000.
4267. John Layton and Co., Ltd., care of Richard Joseph Hall, Room No. 17, Standard Bank Chambers, Commissioner Street, Johannesburg; capital, £20,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

3887. Pilgrim's Creek Gold Mining Co., Ltd., Johannesburg.
3598. Sandycroft Foundry Co., Ltd., Johannesburg.
1100. Reid Bros. (Johannesburg), Limited, Johannesburg.
3673. Leydsdorp Mica, Ltd., Johannesburg.
3892. Telegraph Manufacturing Co. (Colonial), Ltd., Johannesburg.

NOTICES OF INCREASE AND DECREASE OF CAPITAL.

2740. Romola Nigel Gold Mining Co., Ltd., Johannesburg; increased from £10,000 to £50,000.
3072. New Thor Diamond Co., Ltd.; decreased from £29,000 to £14,500.
1773. Consolidated Langlaagte Mines, Ltd.; increase from £745,547 to £950,000.
2070. E. Friedlander and Co., Ltd.; decreased from £252,500 to £75,937 10s.

The Week's Company Meetings.

Position of the Treasury.

Closed Down.

The sixteenth ordinary general meeting of the Treasury Gold Mines, Ltd., was held on Friday in the board-room, Cullinan Buildings, Mr. A. G. Gill presiding. Among those present were Messrs. W. H. B. Frank, J. Jourdan, J. Morisse, T. G. Suter, and H. G. L. Panchaud, secretary.

The Chairman, in moving the adoption of the report and accounts, said: There is but little for me to add to the information contained in the reports of your directors and the consulting engineer regarding the results of the work done during the year which ended on the 31st of March last. The financial statements show that a profit of £4,880 1s. 10d. accrued to this company out of the working agreement with the Jumpers Gold Mining Company, Limited, but you must not overlook the fact that £400 per month had also to be set aside by the Jumpers Company out of its share of the profit till such time as your company's share of the profits reached a total of £53,500. The cash in hand at the 31st of March last was £27,310, and to that must be added £12,500, being the amount of the accumulated deferred monthly profit of £400, paid into a special account by the Jumpers Company, and sundries £2,690, making a total, after allowing for dividends outstanding, etc., of about £42,500. You still own the claims with the buildings and machinery thereon, and these assets have some value, though it is quite impossible to give you any idea as to what they are likely to realise.

Mine Closed Down.

Your mine, as you know, was closed down permanently when the white employes of the company, in spite of the fact that they knew it would mean precipitating the stopping of work for all time, decided to go out on strike at the beginning of July last. It is highly probable that in any case operations would have ceased about two months later than they really did, but during that time further profits would have been earned, and most of the men would have retained their jobs during that period. As it was, the natives, who were mostly voluntary boys, were discharged when the white men left, and your directors were advised that it would not pay to go to the expense of building up a native labour force, which is always a costly matter, for the purpose of extracting and treating the small quantity of ore that remained in the mine. The agreement with the Jumpers Company has been cancelled by mutual consent; your mine is closed without any prospect of its being opened up again, so that it is probable that you will shortly be called together to consider the question of liquidating your company. I have already mentioned that our cash position to-day shows a credit of about £42,500, which means that, after providing for liquidation expenses, you have now, without taking into account the assets still to be realised, an amount equal to a distribution of quite 5s. 9d. per share.

The report and accounts were adopted.

The directors were re-elected as follows: Messrs. W. H. Dawe, C. S. Goldmann, M.P., J. Friedlander, J. A. Cohen, E. J. Renaud, A. G. Gill, and W. H. B. Frank.

Messrs. E. Danckwerts and C. Stuart were reappointed auditors.

Anglo-French Land Company.

The fifteenth ordinary meeting of shareholders of the Anglo-French Land Company of the Transvaal was held on Wednesday in the company's board-room, National Bank Buildings. There were present Messrs. W. Dalrymple, in the chair, A. G. Gill, E. H. Read, C. P. Marais, W. G. Gau, W. H. B. Frank, G. E. Grieveson, L. S. Raymond, secretary; and G. W. Austin, transfer secretary; 37,637 shares were represented out of a total of 80,000.

The Chairman said: Gentlemen, the directors' report and statements of account for the year ended the 31st of May, 1913, are before you for your consideration. The revenue from all sources was £646, the working expenditure was £728, showing a net loss for the year of £82. An amount of £68 has been expended on fencing, being this company's proportion of certain fences erected by owners of adjoining farms. The surplus cash at the close of the financial year amounted to £12,020. An erf in the township of Standerton has been sold for the sum of £60, and the company's property now consists of forty-two farms, having an aggregate area of 86,773 morgen, 800 square roods; one erf in the township of Ermelo, and four erven in the township of Lichtenburg. The majority of your farms are in the district of Waterberg, and it would appear that farms in this district are being gradually taken up. A great deal can be done in improving health conditions in districts such as the Waterberg, and landowners are greatly indebted to the investigators of the Anti-Malarial Association in this respect. No further leases of your farms have been arranged during the year, as, though there have been several inquiries for long leases with options to purchase, the purchase prices offered have not been sufficiently attractive. Your company is still a member of the Transvaal Land-Owners' Association and benefits from the good work performed by the association in the interests of its members. During the year several new statutes have been passed by the Legislature dealing with native land tenure, erection of dipping tanks, and similar matters, and it is felt that the Acts passed will assist towards betterment of agricultural conditions. No new discoveries of minerals or precious stones on or in the neighbourhood of your holdings have come to the notice of the board. The resources of the company are being carefully husbanded, and I may mention in passing that no fees have been drawn by the directors or the London committee since 1903. During the year Messrs. George R. Airth and C. R. Pinder resigned from the board, and subject to your confirmation, Messrs. E. H. Read and W. J. Gau were elected to fill the vacancies so arising. I now beg formally to move the adoption of the report of the directors, together with statements of account for the year ended the 31st of May, 1913.

The directors' report and balance sheet were adopted.

Messrs. W. Dalrymple, G. W. Higgins, E. H. Read, S. C. Black, W. J. Gau and A. G. Gill were re-elected as directors of the company for the ensuing year. Messrs. F. W. Diamond and English and C. L. Andersson and Co. were re-elected auditors, and the meeting closed.

New Gold Venture Syndicate.

The eighth ordinary general meeting of shareholders in the New Gold Venture Syndicate, Ltd., was held on Wednesday in the board-room of the company, National Bank Buildings. The following were present: Messrs. W. Dalrymple, in the chair, E. H. Read, C. P. Marais, C. G. Taylor, L. J. Rudings, G. Burmester, J. E. Grieveson, G. W. Austin, transfer secretary, and L. S. Raymond, secretary.

The Chairman's speech was as follows: Gentlemen, you have before you for your adoption the report of the directors for the year ended the 31st of May last, together with the balance sheet of the syndicate at that date. On reference to the accounts, it will be noticed that an amount of £1,265 is due for the year from the Abels Kop Gold Mines, Ltd. (in liquidation), for interest under the agreement by which that company held a lease of our property. The total amount due from the Abels Kop Gold Mines, Ltd. (in liquidation), to the syndicate is £1,946. As, however, it would appear that the liquidation dividend to be received by the syndicate will fall short of this amount you will notice that the accounts provide a reserve for bad debts of £1,000. During the year the cash resources of the syndicate became practically exhausted, and the directors therefore arranged for a small loan to temporarily finance the syndicate, this loan ranking as a preferential claim on the syndicate's assets. The loan account at the 31st of May last, including £150 advanced in terms of the above arrangement, together with accrued interest, amounted to £22,895. For some time past there has been certain activity in alluvial diamond prospecting in the Schweizer Reneke district, and finds of alluvial diamonds have taken place on farms in the vicinity of your property. Applications have been received for the right to prospect your farms for precious stones, and the directors are now considering the granting of prospecting rights under conditions which will not impose any liability on the syndicate. I now beg to formally move the adoption of the directors' report, together with the statement of account for the year ended the 31st of May, 1913.

The reports of the directors and the balance sheet were adopted.

The following gentlemen were re-elected as directors of the company for the ensuing year: Messrs. W. Dalrymple, G. W. Higgins, L. Hertz and G. H. Bonas.

Messrs. Page and Fry were re-appointed auditors for the ensuing year.

There being no further business, the meeting closed

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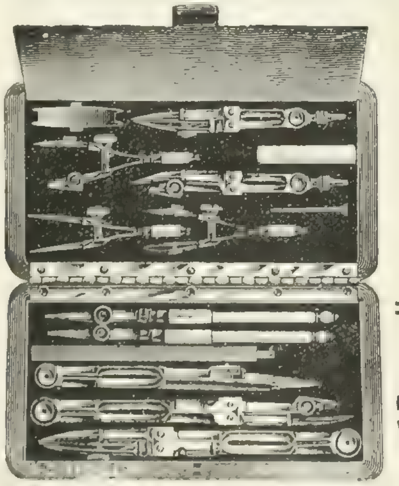

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Notes and News.

Phthisis Act Reform.

The Phthisis Act, 1912, has now had a year's trial, and, doubtless, there are several directions in which it has been found open to improvement. It will be remembered that when pressed to amend it towards the close of last session of Parliament, General Smuts pleaded that the Act should be given a fair trial. The pressure of work has been so great that the Phthisis Board will, doubtless, take some time to prepare its report, and until its issue it would be premature to attempt to draw conclusions regarding the working of the measure. On one point, however, our own enquiries have satisfied us that there is a likelihood of a radical alteration in the Act. It will be remembered that in the present measure provision is made for two classes of sufferers from phthisis. The first consists of those "whose health is not seriously or permanently impaired," who are entitled to receive £8 a month for a period not exceeding one year. The second class consists of the more serious cases, who are entitled to receive a sum not exceeding in the aggregate £400. Now, in practice it is proved that once a man is found to be suffering from phthisis, even in its early stages, he must, in justice to himself, be removed from underground work at once. Indeed, some doctors go so far as never to issue a certificate of the first class at all. They hold that a man has phthisis or he has not. If he has they hold he should be given the full compensation, and not again allowed underground. The contention seems a very reasonable one and backed by medical opinion is bound to carry great weight in any revision of the Phthisis Act. Admittedly the medical provisions of the Act in question were of a tentative nature, and if it can be proved that the line of demarcation between cases and very bad cases is purely artificial and arbitrary, no one—certainly not the shareholders or mine directors—will object to have the anomaly rectified. Other shortcomings may be discovered in the Act, but this, to our mind, seems likely to prove by far the most deserving of remedy.

* * * *

A Panama Honour.

The appointment of Col. George W. Goethals as honorary president of the International Engineering Congress, to be held in San Francisco in September, 1915, is an honour well bestowed. As chairman of the Isthmian Canal Commission and chief engineer of the Panama canal, Col. Goethals' name has become so closely associated with this gigantic undertaking that any reference to the greatness of this engineering work is almost synonymous with his name. It is also gratifying to know that Col. Goethals will preside in person over the general sessions of this congress.

* * * *

Breyten Collieries and an Export Trade.

The output of the Breyten Collieries Company for last month was just on 43,000 tons. The capacity of the plant is about 50,000 tons. Negotiations are, we understand, at present being entered into with a view to building up a substantial export trade for this company, and should these negotiations be brought to a satisfactory conclusion the output will be increased. The colliery is opening up well and the calorific value of the coal has recently shown improvement. Taken altogether the position of this proposition may be regarded as decidedly good and the outlook promising.

* * * *

Low Working Costs at Barberton.

In the recent period of industrial unrest the subject of low working costs has rather been lost sight of. Minimum working expenditure per ton milled is not the fetish to-day it was a few years ago, but that it is still a thing to be striven for, provided a policy consistent with maximum profit is continually borne in mind, cannot be disputed. The most interesting information to hand at the moment in regard to working costs is that the little Fortuna mine in the Barberton district has been working for the past year at less than twelve shillings per ton, whilst for two months expenses were kept down to less than eleven shillings per ton. This is highly creditable work considering that the plant is of only 3,000 tons per month capacity.

* * * *

Striking for Less Wages.

In the Cloncurry district of Queensland over 1,000 men are idle, the miners' union having refused to allow its members to continue the system of contract or piece work which has been in operation, under an agreement, for some time. As a rule, upheavals in the industrial world have as their cause the allegation that the workman is not receiving fair remuneration for his toil. Here the position is quite the reverse; it seems as if the men, or some of them, have been earning too much money. In other words, they have been too industrious, and this does not seem to suit the book as drawn up according to the ideas of the union. At Cloncurry the standard wage rate is high, miners and timbermen being paid at the rate of 12s. to 15s. per day, and artisans from 15s. to 23s. By taking contracts, however, as much as 20s. per shift can be, and has been, earned, and this the autocrats of the Trades Hall have decreed must cease.

* * * *

Big Water Scheme.

The Rand Water Board has approved a scheme for securing an adequate additional supply of water from the Vaal River. During the last few years numerous schemes have been under consideration, including the Vaal River, the Crocodile River, and catchment areas considerably removed from the centres of requirement. The Vaal River scheme, which it is proposed to put into operation, will take four years to complete, and will cost one and a third millions sterling. The proposal is that the water be pumped from the river to the existing Water Board pumping station at Zwartkopjes—lately there has been a drop of half a million gallons a day there—and from that point it will be passed through pipes to balancing tanks and reservoirs already in use in the distributing centres.

* * * *

"Chartered" Land Scheme.

The land scheme of the British South African Company has caused a flutter in Chartered shares. It was mentioned in the last annual report and also at the meeting at which, it will be remembered, Sir Starr Jameson presided for the first time. The report, dealing with the land question, said:—The time has now come when further forward action is justified. The work of the company in connection with land has resolved itself into two wholly distinct, though mutually helpful, branches. On the one hand, it is necessary to maintain and develop the policy from which such excellent results have already been secured, of improving the conditions of agricultural life by establishing higher standards of farming with the twofold object of increasing directly the return which settlers can derive from their land, and indirectly the value of the company's landed estate. On the other hand, now that adequate funds are available, the company has embarked on a large scale at its developed estates upon some of the proved branches of Rhodesian agricultural and pastoral enterprise. Their difficulty was to know exactly what steps to take to induce a larger population. When Lord Winchester was out there, he had endeavoured to arrive at the solution, and came back full of enthusiasm. He had prepared a large and elaborate scheme for closer settlement, which perhaps would be very costly, but which, quite possibly, would be justifiable. . . . It involved preparing the land for the white settler, which meant advancing him practically everything, and shareholders would realise what a large capital outlay that would involve.

* * * *

Brisk Diamond Business.

According to London advices, the diamond market continues in the same satisfactory condition as during so many weeks past, and the expansion of trade is steadily continuing. Most of the heads of the important Continental houses are now returning from their holidays, or have already done so, and it is anticipated that the next few weeks will witness a very brisk business indeed in all quarters in the industry. As far as the rough market is concerned, the Diamond Syndicate sold out their Bultfontein shipment, and are offering Kimberley goods, for which we understand the applications for sights are very heavy. The Premier were also very successful with their last month's production, and are once again in the happy position of having empty safes. The reports from the diamond share market are much the same as last week. So far, as in all other sections, there is not much business passing; but the undertone of the market, as is only to be expected, bearing in mind the condition of the industry, is remarkably firm, and, generally speaking, whatever business is done is investment buying, there being few, if any, sellers about of any of the sound concerns. The Amsterdam correspondent of the *Financial News* writes as follows concerning the position in that centre:—" In the diamond trade the number of unemployed is increasing again, owing to the uncertainty over the American tariff, which is dragging along without any indication as to the ultimate decision. When this obstacle can be removed more activity is expected, especially if the crops in the United States turn out as well as they seem likely to do."

* * * *

The Rooiberg Report.

The Rooiberg annual report—extracts from which we print elsewhere—has been very satisfactorily received. It is thought that Mr. Way is thoroughly justified in his eulogy of the new plant, and in his estimation of the probable ore reserves. It is true that in regard to the latter he departs from the strict letter of the law as laid down by the Institute of Mining and Metallurgy, but he so clearly qualifies his estimates that no ground for misunderstanding remains. Some shareholders still criticise the working costs at the property, on the lines made familiar last year. A ten-stamp tin mine, they say, should not be run as if it were a Rand mine. On the whole, however, the most critical can find little to cavil at in the report.

* * * *

Gold in Farming.

Will South African miners follow the example of Australian and ultimately become farmers? The latter country is now said to be looking out for another sensational discovery of gold. She wants to chance on to another Ballarat or Kalgoorlie, which would mean an inrush of hundreds of thousands of excited miners. But even on the richest of omniferous country, only a very small proportion of the diggers are successful. Not one man in twenty dug up nuggets in the golden-gullies of Ballarat and Bendigo, The others took to the soil for a living, and they and their sons make up the bulk of the prosperous farming community in Victoria to-day. They found that agriculture, if less exciting than the quest of gold, was more assured, and in the long run a better industry. It was the same in Western Australia, where hundreds of miners turned from Kalgoorlie and other rich fields to the great agricultural expanses which called for settlement. However, even without great new gold discoveries, Australia is not attracting new settlers on a big scale. Last year, the excess of arrivals over departures numbered 93,000, and of these the great majority are engaged in farming. This year the stream of farmers and farm workers is again a strong one, and an interesting development is the attention the new arrivals are giving to the irrigated settlements of Victoria and New South Wales. They say in Australia that the next best thing to striking a patch of alluvial on a goldfield is to become the owner of an irrigated farm. In South Africa we say the same thing—with greater emphasis.

* * * *

The Latest Commission.

We cannot say we are greatly impressed with the personnel of the Economic Commission, though little fault can be found with its very comprehensive terms of reference. Professor Chapman, of Manchester University, the Chairman, will doubtless bring to the inquiry an open mind and a vast amount of knowledge bearing on the intricate subjects to be dealt with. But the South African members of the Commission are less happily chosen. The only representative of the Rand is Mr. Howard Pim, the other three members being a farmer from Cradock, a merchant from Port Elizabeth, and a native affairs expert from Durban. There are many men on the Rand whose presence on the Commission would ensure it against covering old ground, and enable it to start its investigations where others left off. We should like to have seen Mr. Alexander Aiken, for instance, included. His masterly paper on the Cost of Living on the Rand, read before the British Association in 1905 remains a classic of its kind, and, in our memory, has not been improved upon. We print, for record purposes, the terms of reference to the Commission. They are to enquire into and report upon the following matters:— (1) Wages, working hours and the cost of living on the Witwatersrand and other industrial centres within the Union of South Africa. (2) Comparison of wages, working hours and cost of living at such places with those ruling in other countries. (3) Cost of production in the Union compared with that of other countries. (4) The question of establishing a minimum or subsistence wage in any trades or industries within the Union. (5) The payment for overtime and for night work in trades or industries within the Union: and further to appoint the following gentlemen to be members of the said Commission.

* * * *

Native Labour Shortage. The native labour returns for the mines for August show a decrease of 12,300. The decrease for the corresponding month last year was 2,400. It is reported that the Mozambique boys are commencing to come in freely again through the W.N.L.A. recruiting agencies in Portuguese East Africa. The damage caused by the stoppage of recruiting could not be repaired in a few days owing to the distances and other difficulties to be overcome. The Cape natives, however, are busy putting in their crops for the year, the rains having come along earlier than usual in the Transkei. This fact will mean that the regular supplies will be available earlier than usual.

* * * *

South African Prospectors Libelled. That a certain amount of prejudice always existed in the Congo against South African miners has long been suspected. Now we know it. An article, entitled "Souvenirs de Brousse et de Prospection," has been published in the *Bulletin Trimestriel of the Société Belges d'Etudes et d'Expansion*, by M. Marc Minette d'Oulhaye, the Belgian mining engineer. The article is in substance a lecture delivered by M. Minette last February before the Belgian society, and in the course of his remarks the lecturer very unsparingly criticises the English prospector. We translate, so far as translation is possible, one of the most "crushing" passages in the pronouncement: "I propose, speaking as a prospector, to take you on ground that is familiar to me, among the mineral riches of the famous Katanga region. A few words concerning prospectors. There are real prospectors and fraudulent ones (*faux*). The last are represented typically by the South African adventurer, relic of the Boer War. Generally speaking, he is a waster (*fainéant*), who has taken to the bush so as to be able to live free from control. Formerly carpenter or blacksmith, he prefers to go on tramp, with his gun slung over his shoulder, rather than to work. He does a little prospecting, a little panning, from time to time, in intervals of hunting. Then he returns covered with dirt to a tent still dirtier than himself, and drinks himself to sleep with whisky. Such a man will only discover a mine by accident; moreover, he doesn't trouble himself to any extent in the matter. Either he draws pay from a company or he hopes to float a wild cat scheme (*un bluff*), and to gain his living by dubious methods. No sooner has he returned to town—say, Bulawayo or Elizabethville—than he spends in champagne the money he has gained. For some days he is quite an important personage about the bars of the town." M. Minette then draws a flattering portrait of the prospector "qui travaille, qui veut trouver," whom he identifies with "the engineer studying the geological nature of the country, and so determining the likely points for fruitful exploitation, and who, armed with science and energy, searches himself the inaccessible (*sic*) valleys and the denuded summits of the mountains." The fact that there is a little truth in these strictures makes their exaggeration more difficult to combat. We would like the opinion of the genuine prospector regarding them.

TOPICS OF THE WEEK.

THE PROBLEM OF THE UNEMPLOYED ON THE RAND.

The present problem of the white unemployed on the Rand is like that of no other mining field. The sole feature it possesses in common with the same trouble in other industries is that it has a strike for its origin and chief cause. In industries whose products are liable to fluctuating prices, strikes are as often as not a result, or at least a symptom, rather than a cause of unemployment. On the Rand the question admits of no doubt whatever. Before the strike, employment was on the up grade; good men were scarce, and even the worst could find work. Since then men have had to go in daily increasing numbers and the immediate future holds out no promise of their reinstatement. There is no question of victimization. The men can see that for themselves—now. Before the strike the danger of disturbing the native labour supply was hammered into the white workers, and apparently accepted without demur. The white men on the mines admitted the risk; they could hardly shut their eyes to it if they would. Yet they struck! The inevitable has happened. Native labour is scarce, and growing scarcer. Not for years, certainly never since the industry assumed its present proportions, has the native labour supply been so depleted. The result is increasing white unemployment. The bitterest enemy of the mine directors cannot blame them for this deplorable state of affairs. It is none of the latter's doing. They cannot, at a moment's notice, alter the labour system that has prevailed here since the industry began. They cannot, in justice to the shareholders for whom they are the trustees, continue to pay wages to white overseers when there is no longer any one to oversee. Nor is there any hope of early amelioration. Undoubtedly the natives are unsettled. It would be surprising if they were not. When every section of the community stood astounded at the spectacle of a "sympathetic" strike under the unique conditions ruling on the Rand, it was not to be expected that the receptive mind of the native would go unaffected. The native mind may remain unimpressed by the mightiest engines of modern warfare or the last word in the complex ingenuity of modern engineering. But no display of the elemental passions of hate or strife is missed or misunderstood by it. These things we all know now, since it is easy to be wise after the event. The pity is they were not realised by those responsible, in their thoughtlessness and blind passion, for the present state of affairs. From these mis-leaders, doubtless we will have more talk of "victimization," but no one is deceived. The facts are only too plain. The appalling "wastage" in native labour since the strike has only one cause, and can have only one consequence. Neither Government nor recruiters can do more than they are doing to stop the rot. Superhuman efforts are being made to induce "boys" to come back to work, to reassure the chiefs and tribal heads that peace is restored on the Rand. The heads of the Government Native Labour Department and of the Native Recruiting Corporation are talking themselves hoarse in the cause, and their efforts will doubtless be rewarded—in time. But not yet. Meanwhile, there will be the murmurings of the unemployed, the appeals and threats of the leaders to the Government and vain "kicking against the pricks" of inevitable circumstance. Threats of strikes and reprisals can only make matters worse. Indeed, it is difficult to see how they can escape being worse before they can become better. But the facts must be faced. The trouble is not of the mine administrations' seeking. It must now run its normal course, and will be cured all the more quickly if unimpeded by futile threats from the leaders and foolish acquiescence therewith on the part of the men.

"COLOUR" OR "INCOMPETENCY" UNDERGROUND.

"Why should we in the Transvaal be forced to employ 'white men' when in other parts of the Union employers of labour may engage 'competent' men. It is not right, it is not equitable, and I have even got serious doubts whether the Act forcing us to do this is legal under our constitution."

In these almost prophetic words the last President of the Chamber of Mines, Mr. M. G. Elkan, in his valedictory address in February, summed up the question of colour as it applies underground on the Rand. It is notorious that the same question has been reiterated in many quarters during recent months, and many people who would have staked their lives for the principle involved are, in view of recent happenings, coming to ask themselves if it is worth it. Two very dissimilar influences are at work to create this attitude of mind. First, the ravages of phthisis set many wondering whether the white man who falls a prey to the disease so readily might not more largely be replaced by the native who for sundry, well-known reasons is far less prone to fall a victim. Second, the growing recognition of the fact that the real workman in the mines is the black, and that the discontented and turbulent white man is no more than a pampered, highly-paid superviser of the labour of others, whose status and presence are artificially maintained on the Rand by a law that flies in the face of the Act of Union in laying down one rule for the Transvaal and another for the rest of the Union. Unquestionably discussion of the matter stands on most delicate and dangerous ground, but nothing is to be gained by ignoring the plain issues forced into prominence by recent events. The health aspect of the colour question was first brought forward by Mr. W. Cullen in an important contribution to our anniversary number last year. Mr. Cullen certainly made out a thought-compelling case for consideration; and the fruit and blossom of his ideas was seen in the suggestion made in all seriousness by the outgoing President of the Chamber of Mines in his valedictory address last April, which, presumably, had been approved by the Executive Committee of the Chamber of Mines. It will be remembered that Mr. Elkan declared that there was but one way of remedying existing labour troubles, and that was by effecting a decrease in the number of jobs underground filled by white men while increasing the number on the surface. If a policy framed on these lines could be carried out, Mr. Elkan thought it would not only lead to a considerable decrease in working costs, but would also considerably enlarge the avenues for the employment of white men. As far as underground work is concerned the industry is confronted with the fact that many of its troubles are due to there being an insufficient number of white men available to do it, and just the reverse is the case on the surface. Here there is a surplus of skilled workmen, and in our midst there is growing up a population which, if it is to be retained in the country, as Mr. Elkan showed, must have work to enable it to live. It appears possible, if only the white man will undertake to work here as he works in other countries, to do away with the bulk of the native labour on the surface and to replace it by white labour, always providing that the white man will do an honest day's work for a fair day's pay, and that he will clearly understand that he has got to be a workman and not an overseer. The scope for employment which will offer itself if such a policy is adopted need not be dilated upon. On the other hand, the state of affairs underground also needs remedying. Either the number of men available must be increased or the number of jobs reserved for them decreased to the extent that there are men of sufficient experience ready to fill them. The native, we know, responds to kindly treatment, is very amenable to discipline, is a quick learner, and dependable if shown with patience what is expected of him. In other words, could we not make much more use of the native underground than we do now? The adoption of the suggestion would, of course, mean comparatively high wages for a selected few natives and a reduction in the number of white men underground. Indeed, only the best men would be kept underground; they would run less risk from the dust. This arrangement should please everybody, for the inefficient miners, of whom we hear so much, would be eliminated, the good ones would all earn big money, and the natives, under the new conditions, might remain longer at their work than twelve months. The second consideration is, of course, more frankly utilitarian and involves far larger questions of principle. Regarded purely from the shareholders' point of view—none the less important because ignored by everybody—it is monstrous that the gold mining industry of the Rand should be specially legislated for in regard to the colour of labour it employs; that the law should discriminate between mining here and mining and other industries in other Provinces. No wonder Rhodesia hesitates to join a Union in which such sectional legislation obtains. One wonders if the white "workers" of the Rand recognise the frail, artificial and inequitable status they are privileged to hold under a questionable law, or rather under regulations framed thereunder. That the law has been allowed to go unquestioned at all is due to the sympathy of the very men so often reviled as capitalists and oppressors of the working men—viz., the Phillipses, the Chaplins, and the Farrars. Had these men been the cold-blooded slave-drivers so dear to the imagery of the Labour orator, they would long ago have upset the hollow artificiality upon which the white supervisor's position is guaranteed to him in certain numbers on the mines of the Rand. If low working costs were their fetish and a subservient labour army their only object, they would have swept away every vestige of pretence and unreality from the system under which these mines are handicapped with incompetents and "Jacks of all trades" in the sacred name of white labour. That is the true obverse side of the medal to "Creswellism." Not more white labour underground but less of it is the true economic necessity, and only the unthinking can have failed to see that long ago. If the Rand industry were run as a purely business concern by "economic men" of "blood and iron" there would be no white men's grievances to sing about, because the number of white men demanded by the simple needs of the industry would be reduced out of all recognition to the present force. Seen in the light of these facts one can understand and forgive the impatience of some of the leaders of the industry with the frothy, rule-of-thumb demands of the Labour leaders, whose wit can only compass the local application of the ready-made cries and shibboleths of labour in other countries. Like the drowsy Pretoria Civil Servant too lazy to make the necessary changes in inter-Colonial agreements, they are content to write at the top of their demands, "throughout the following for 'Canada' or 'Australia' read 'South Africa'"—and leave it at that. The labour problems of this country are not like those of any other, and the worst characteristic of our Labour leaders is that they fail so signally to recognise this elementary fact. In this regard Mr. Merriman, though he may not be in touch with the details of the Rand industrial position, at any rate grasps its great underlying, basic principles. His warnings to the white workmen of South Africa are fresh and clear. In the suave euphemism of Mr. Elkan, why should not "white" read "competent" in this Province as elsewhere in the Union? Is not the question for the white supervisor on the mines, "the writing on the wall"?

THE COAL TRANSPORT SCANDAL.

It may be remembered that the original Railway Estimate framed for additional coal trucks was cut down last year on the motion of Mr. Merriman by half, and the coal industry of the country is now suffering from that short-sighted action on the part of the Government. At the Coronation Colliery meeting this week Mr. Alexander Aitken, who presided, had some trenchant remarks to make concerning the attitude of the Railway Administration towards the coal industry. The delays occasioned by shortage of trucks have been often referred to, but there has been no more noteworthy condemnation than that uttered by the Chairman of this colliery.

"The most unsatisfactory feature in the business of both the Association and the Colliery is the persistent failure of the Railway Administration to provide an adequate supply of trucks for the trade," said Mr. Aitken. "This subject has been a matter of complaint for years past. The Administration, when referred to, as is continually being done, seeks to excuse itself on the plea that there are large supplies of new trucks on order, or that trucks are held up at some point or other. The gravity of the matter to us is that the nascent trade with the East through Delagoa Bay has been dislocated, and is liable to be cut off through the failure of the Association to deliver as required, and, further, the colliery has lost more than a month's work out of the twelve, although standing charges and also white wages had to be paid in full notwithstanding. The fact is that the Administration has either failed to gauge the requirements of its trade, or it has culpably neglected to provide adequately for the trade, and this condition is not a new and, one might hope, an accidental circumstance, but is of old standing and dates back several years. How long is the public going to wait for redress? Private representations have had little effect in the past, and I fancy that nothing short of action in Parliament will stir the Railway Board to a sense of their duty and to successful activity."

These forcible remarks were endorsed by Mr. H. de V. Steytler and Major W. L. Bagot, and from the latter came the excellent suggestion that the Coal Owners' Association should publish periodically the number of working hours lost by the collieries through shortage of trucks. It seems that no appeal can move the Railway Administration in this matter. Over and over again our own columns have borne testimony to the effect its apathy has had in throttling the coal mining industry of the Transvaal. It is a striking commentary on Mr. Hoy's excuse of inadequate warning that over a year ago the Chamber of Mines was moved to take action, urged thereto by the collieries on the one hand and by the power companies on the other. On that occasion the grievances against the Administration were set out with great clearness and detail, and as the position has in nowise improved in the interval the correspondence that then passed may be drawn upon to elucidate and emphasise the evil as it exists to-day. At that time Mr. Gordon Sandilands, acting on behalf of the Coal Owners' Association, laid before the Chamber a lengthy document in the course of which he stated, *inter alia*:—"The total loss of working hours far exceeds the total number of working hours of any single pit during the current month, assuming twenty-five working days of ten hours. The aggregate monetary loss entailed upon collieries is greater than if a single colliery were entirely closed down for a month, because during intermittent stoppages of work natives have to be paid whether they are working or idle. The wastage of native labour is apparent, and may be estimated at 600 boys idle during a whole month. In all cases the railing capacity of the various collieries has been taken on a conservative basis, and is well within the present daily output capacity of the individual collieries. During the month of April, 1912, the Associated Collieries have made no abnormal demands upon the S.A.R. Administration for rolling stock, since their output during that month, viz., 387,647 tons—all of which is rail-borne—was less than the tonnage carried during the months of March, May, July and August, 1911. It is therefore a legitimate inference that the S.A.R. Administration has not increased its rolling stock since March, 1911, since it cannot carry as much in May, 1912, as it did twelve months previously. I would point out that the estimated loss in tonnage does not take into account the volume of sea-borne trade (due to the recent sudden increase in demand at the ports) which the Association has had to decline owing to the meagre supply of trucks. The figures given merely indicate the loss of trade which accrued, after the Association had been advised by the S.A.R. Administration of its ability to carry a definite daily tonnage (2,500 tons) coastwards. It was upon this figure, together with that for the normal internal demand, that the Association undertook its commitments. The Administration has failed to supply the Association with its estimated requirements of trucks since April 9th, 1912. It is a matter of common knowledge that from time to time colliery owners have made representations to the Administration concerning the inadequacy of rolling stock, and have constantly pointed out that coal supplies to the gold mines are perpetually jeopardised thereby. Their representations have been met by promise of improvement, but the evil still exists." In addition the following statement on behalf of the Victoria Falls and Transvaal Power Company, Limited, and the Rand Mines Power Supply Company, Limited, regarding shortage of trucks for dealing with the coal traffic on the South African Railways in the Transvaal was received by the Chamber from Major Bagot:—

The complaint of shortage of trucks is one of long standing. The matter was recently brought to a head by the receipt of a letter from the Transvaal Coal Owners' Association just before Christmas (dated December 21, 1911) warning the Power Companies of a serious shortage in the supply of empty trucks, and consequently of the probability of a serious shortage in the supply of coal during the Christmas holidays. The matter was at once taken up with the Railway Administration, and led to the interchange of considerable correspondence, copies of which have been furnished to you. I will endeavour to epitomise as shortly as possible the contentions put forward by the Power Companies and the attitude adopted by the Railway Administration thereon, as contained in the above-mentioned correspondence: (1) The Power Companies have demonstrated the shortage in coal ordered over coal delivered during the months of November and December of last year as an example and the irregularity of the supply. (2) The Power Companies have pointed out that to guard against such shortage it has been necessary to order more coal than would be actually required if punctual delivery could be depended upon, and to safeguard themselves, the bunkers at the various Power Stations have had to be kept as full as possible so as to cope with periods of reduced supply. (3) That owing to the above, difficulties occasionally arise when excessive supplies are delivered by the Railway, which presents the off-loading of trucks within the specified time, and which cause demurrage charges to be incurred, and also necessitates the re-consigning of coal from one Power Station to another. (4) The Power Companies point out that on several occasions coal has been delivered by the Railway in covered cattle trucks, and complaints of deliveries in "shorts" are of frequent occurrence. (5) The Power Companies maintain that the storage capacity at their Power Stations is ample, namely, six days' supply; recently at Rosherville there has been ten days' supply owing to excessive deliveries. (6) The Power Companies wish to point out that in the case of coal arriving at the Germiston Yard and re-consignment of coal, originally consigned from Simmerpan to Rosherville, or *vice versa*, no appreciable loss of time is entailed. To the above contentions the Railway Administration offers the following explanations:—(a) That the Power Companies order coal in excess of their requirements. (b) That the storage capacity at the Power Stations is inadequate. (c) The bald statement is made that, as a general rule, and under ordinary conditions, the Administration is quite capable, with existing vehicles of the Hopper type, of meeting the all-round demand. (d) The Railway Administration largely attributes the irregular deliveries of coal to the failure of the Power Companies to off-load trucks immediately and to the re-consignment of trucks. In conclusion, I desire to lay stress on the fact that in the correspondence which has passed between the Railway Administration and the Power Companies, the complaint made by the latter is the irregularity of the delivery of coal, which they maintain is due to the shortage of coal trucks, and they have not complained of delay in transit, which is inferred in more than one of the Railway Administration's letters.

These statements were laid before the Minister of Railways by the Chamber of Mines, which, at the same time, pointed out that within the twelve months difficulties had arisen in the transport of coal over the railway system on at least two occasions to such an extent as to cause the great risk of milling operations on the gold mines being curtailed owing to short supplies of coal trucks, thereby entailing great loss to the gold mining industry and the community at large. In July of last year a deputation from the Chamber met the General Manager of Railways and pressed for an amelioration of the conditions. The General Manager admitted that there was a shortage of rolling stock, but expressed the hope that the position would be shortly improved. Notwithstanding the fact that the tension was removed and relief was temporarily afforded, difficulties again rose at the end of the year, and a good deal of correspondence passed between the Victoria Falls and Transvaal Power Company and the General Manager in regard to shortage of trucks. The contention advanced by the Victoria Falls and Transvaal Power Company and by the Transvaal Coal Owners' Association was that the supply of hopper trucks was inadequate to meet the requirements of the traffic. The Minister was requested to give the complaints his serious consideration, and if he could see his way to provide a remedy. The Minister could provide no remedy, and the result is seen in the parlous plight of the coal industry to-day, as explained by Mr. Aitken. Apparently it is futile to criticise the S.A.R., because its very size and unwieldy bulk render it impossible to fix or fairly distribute the blame. But the coal truck scandal cannot any longer be allowed to continue, and those members of Parliament who can detach themselves from class or sectional interests to still cherish the interests of the country as a whole must make it one of the first questions to be raised in the next session.

THE LOT OF THE RAND MINE WORKER.

A Special Enquiry into the Conditions of Life and Work along the Reef.

V.—ARE UNDERGROUND HEALTH CONDITIONS IMPROVING? FURTHER INTERVIEWS WITH THE MEN.

We this week conclude an account of the interviews a representative of this journal had with men in the City Deep mine last week on the subject of health conditions and the lot of the men generally in and on the mines. It will be recalled that the City Deep mine was expressly singled out for a visit, as working miners in another property had expressed the view that it was a "bad mine" as regards ventilation, etc. As was shown in the previous instalment of this series of articles the bad reputation of the City Deep mine did not evidence itself to our representative during his visit. On the contrary we were agreeably surprised to find the ventilation much better than we had been led to expect. Generally speaking, the temperature in the workings was warmer than in the Village Deep, and in a few ends it was notably hot. In these latter workings, however, only a little time is required and connection will be effected with other workings, when conditions will be much improved. Throughout the mine there will, too, be a great betterment in regard to ventilation when the new circular central shaft (which is being sunk for ventilation purposes) has effected further connection between surface and the mine workings. We found the mine well equipped with sprays, ventilating doors, and water pipes.

PHTHISIS AND THE MEN.

Mr. M——, a Midland miner, on being interviewed stated "Undoubtedly health conditions on the Rand have improved materially of late."

"Do you think it likely that they will be so further improved that miners' phthisis will be practically eliminated in the near future?"

Mr. M—— laughed. "That's rather a tall order. I wouldn't like to say that. But you could work down here for a number of years without your health suffering if you took care of yourself. I've been mining now for a good many years and I don't look bad, do I? I am very careful both underground and at surface. I don't drink."

We asked Mr. M—— for an expression of opinion in regard to some of the demands formulated by the "representatives" of the men during the recent industrial crisis.

"I'd rather not say anything on those points," he replied; "I'm earning a comfortable livelihood, and I don't mix myself up too much with politics."

Another Cornishman we interrogated concurred with the previous expressions of opinion as to the improved conditions obtaining in the mines.

"Yes," he said, "I don't see why you shouldn't work in most places in the City Deep and last for a good number of years if you took precautions. Things are much better than they used to be, but a few years ago they were very bad indeed."

"Do you think most of the good miners of the Rand have been killed or incapacitated by miners' phthisis?"

"Yes, I do. You don't see old men, for instance, working underground in the mines of the Rand. In Cornwall sons go and work with their fathers. That doesn't happen here because most of the miners die or have to 'lay off' before they reach anything approaching old age."

"You don't think the average Rand miner of to-day is as good as the average of a few years ago?"

"No; I'm sure he isn't so good. But he does more work."

"But if he isn't such a good workman how is it that he does more work? Has he got to labour harder? Do you think the extra work is attributable to 'speeding up'?"

"Oh, yes, undoubtedly."

"What do you think is the principal cause of dissatisfaction along the Reef?"

"Cutting of contract prices. It goes on right along the Rand and creates a lot of unrest. If a man refuses to accept a cut contract price the manager will find some one who will. The incoming man may or may not come out well on the new price. He may lose money and leave his stope in a bad condition. The next man may spend his labour improving matters but may throw up the job too. The next man again will reap the benefit of his predecessor's labour and make good money. So it goes on, and this is the chief cause of discontent along the Reef to-day."

The last man we interviewed in the City Deep expressed the opinion that men often had too much work to do, or rather too many natives to supervise. He instanced the case of a man who was running six or seven machines, and contended that this could only be done at risk to his life and limb and the lives and limbs of those under him.

DISCHARGE TICKETS AND "SPEEDING UP."

In addition to the views so far reported there are certain other points to which reference may be directed, points resulting from the interviews. In regard to the question of discharge tickets, for instance, one man thought that they often did a grave injustice to the men. He expressed the opinion that it would be far more fair if the men were engaged on their merits, and if they were found unsatisfactory their services were terminated without the discharge ticket system. He contended that men were often "sacked" without proper reason. A man so paid off might be a very good workman in reality, but under the discharge ticket system he might walk the Reef from one end to the other without finding employment. His discharge ticket condemned him, he was a branded man, and often great injustice was done in this way.

A few words may be said on the subject of "speeding up." That men are "hustled" more now than formerly was alleged by several of our informants, but we failed to elicit any definite or valuable expression of opinion that this hustling resulted in men being called upon to deliberately risk life or limb. Witness, for instance, the opinions of one of the men we interviewed in the Village Deep. We quote a portion of his remarks again.

"A few years ago £8,000 profit per month was considered good enough for this mine. Now they expect £20,000 or more."

"And how has this extra profit been secured? Has the grade of ore improved?"

"I don't think so."

It was suggested that the pushing ahead of development, more native labour, and better organisation of the native labour force had been contributory factors. Mr. W—— acquiesced. We returned to the point.

"Do you think the increased profit has been won by 'speeding men up' and getting them to take unnecessary risks? Would any mine captain or shift boss here ask you to unnecessarily risk life or limb to increase tonnage?"

"No."

In this connection we wish to point out that neither has this extra profit been secured by the reduction of white men's wages. On the contrary, the pay sheet of the Village Deep to-day shows that the average wages are higher to-day than they were a year or two ago. And, in regard to accidents, these have declined during the period referred to by our informant.

These are interesting points and they serve to throw rays of much needed light into the subterranean darkness of the mine and the conditions under which men toil therein. In our next issue we propose to reconsider the various views expressed by workmen which have been recorded in the last two or three issues of this journal, and to attempt some deductions from these expressions of opinion by the man behind the drill.

A YEAR'S NEW MINING PATENTS.

Work of the Transvaal Chamber of Mines' Patents Committee.

THE following memorandum sets forth the work of the Patents Committee of the Chamber of Mines during the year 1912:—

At the end of 1911 the following applications were *sub judice*, and they have been disposed of as follows:—No. 569/10, W. C. Hazelhurst: "Tube Mill End Liner"; application abandoned. No. 304/11, D. W. Stacey: "A new process for the extraction of gold or other metals from slimes by cyanide or other chemicals"; application abandoned. During the year twelve ordinary meetings of the committee were held. Number of specifications applied for, 188; number of specifications reported upon, 104. Of the 104 specifications examined by the committee, in 76 cases it was decided to take no action, but with regard to the remaining 28, opposition was entered by the Chamber, with the following results:—No. 77/11, G. A. Robertson: "Improvements in driving means of automatic feeders for feeding ore and the like to crushing and grinding machines"; application abandoned. No. 89/11, Smith and Innes: "Improvements applicable to the actuating fluid supply connections for rock-drilling machines, pump connections, and the like"; application amended. No. 94/11, Jess and Horne: "Improvements appertaining to the means for connecting rock-drilling machines to their operating fluid supply pipes"; application abandoned. No. 102/11, W. C. Boyd: "Improvements in rollers for incline shafts or the like"; application abandoned. No. 115/11, C. W. Dowsett: "Device for maintaining an even flow of pulp from a centrifugal pump"; application amended. No. 142/11, E. E. Johnson: "Improvements in extracting metals from their ores and apparatus therefor"; application amended. No. 219/11, H. A. Stockman: "Improved concrete reinforcement and apparatus for producing the same"; application abandoned. No. 244/11, H. McLean: "Improvements applicable to the cam shafts of stamp mills"; application amended. No. 462/11, G. Buchanan: "Improvements in the tools and tool rests of lathes for cutting zinc"; application abandoned. No. 463/11, R. N. Nissen: "Improvements in battery posts for stamp mills"; application abandoned. No. 467/11, C. F. E. O. Schmitt: "Improvements in feeding means for tubular and like grinding mills", application amended. No. 494/11, C. Chisholm: "Improvements in feeding means in tube mills and similar rotary grinding machines"; application abandoned. No. 511/11, J. H. Dale: "Improvements in the linings of tubular grinding mills"; application abandoned. No. 567/11, D. H. Evans: "Improvements in means for aerating slimes, cyanide solutions, and the like"; application amended. No. 573/11, Hoyle and Guess: "Improvements in classifiers"; opposition withdrawn. No. 590/11, E. C. Johnson: "Improvements in grinding mills"; application abandoned. No. 6/12, Gwynnes, Ltd., Breeze and Macdonald: "Improvements relating to electric motors and to pumps connected thereto"; opposition withdrawn. No. 75/12, W. Bullock: "Improvements in stamp mills"; application amended. No. 155/12, D. Bosqui: "Process of and apparatus for precipitating materials from solutions"; application amended. No. 201/12, Barclay and Barclay: "Improvements in connection with raising and lowering of pit cages"; application amended. No. 227/12, Northern Lime Co. and B. Macdonald: "Improvements in apparatus for ore pulp slimes and the like"; application amended. No. 423/12, J. G. P. Thomas: "Improvements in and connected with winding apparatus and the like"; opposition withdrawn. No. 93/12, L. Ussher: "Improvements in purifying air in mines"; application granted. *Note.*—The Chamber's opposition was heard before the Supreme Court, Pretoria, on November 21st, 1912, when judgment was entered for the applicant. The Chamber has lodged an appeal. At the end of 1912, a decision had not been come to regarding the following applications, to which opposition had been entered by the Chamber:—No. 81/11, J. Penhale: "Improvements in purifying mine air." No. 510/11, J. B. Roberts: "A system and mixture for lubricating air compressors and purifying compressed air." No. 120/12, J. E. Horsfield: "Improvements in tube mill feeders." No. 148/12, J. G. Gibson: "Improvements in tube mill liners and the like." No. 225/12, Symmes and Trent: "Method and apparatus for precipitating cyanide solutions." *Summary.*—Oppositions entered, 28: oppositions withdrawn 3, oppositions unsuccessful 1, applications abandoned 8, applications amended 11, applications outstanding 5=28.

THE WORK OF THE MINERS' PHTHISIS SANATORIUM.

Points from Report of Medical Superintendent—High Death Rate—Light on Improvidence—Question of Amusements.

IN a report dated 18th February, 1913, the Medical Superintendent of the Transvaal Miners' Phthisis Sanatorium says, *inter alia*:—

"The Transvaal Miners' Phthisis Sanatorium was opened on the 23rd November, 1911. The accommodation provided for sixty patients, but this number was never in residence, owing to the prejudice existing in the minds of the miners against the Institution. The opinion of the mining public was that the Sanatorium was simply a place to die in, and it is only now that the impression has been removed. That this had taken place is reflected in the fact that the number of patients was greater at the end of the year than at any other period, and the applications for admission are steadily increasing. Since the opening to the end of 1912 the number of patients admitted was 165. Of these, 72 were discharged, 47 died, and 46 remain in the Sanatorium. The death-rate has undoubtedly been heavy, but at the same time the diseases treated are grave ones. Tuberculosis in an otherwise healthy person is a difficult disease to cure, but tuberculosis superimposed on silicosis is very nearly hopeless. Further, the miners delay coming in to the Sanatorium until absolutely compelled by the urgency of their symptoms. Of the discharges, 9 were discharged for insubordination and drunkenness, 9 elected to return to England when the Compensation Act came into force, and 27 were discharged as being fit to take up surface employment—two actually returned to underground work. Six more or less improved cases were permitted, on their repeated request, to leave the Institution in order to try the effect of other localities. The twenty-one remaining discharges are those who simply walked out of the Institution without warning and without permission. Some of these were progressing quite favourably, and would ultimately have been discharged recovered, but they do not appear in my figures under that heading. Similarly, the patients who left for England and those discharged for misbehaviour are not available for the purpose of showing a true percentage of recoveries. Persons in all stages of the disease are admitted to the Institution, and those having pure silicosis are undoubtedly benefited by their residence and treatment, and a large percentage of them are able to return to their homes with an increased expectation of life, and to take up light surface employment. In cases in which the silicosis is complicated with tuberculosis the prognosis is not so good, and in advanced conditions must be regarded as hopeless, but these also benefit by the careful nursing they receive, and at the worst their days are prolonged in relative comfort. It is rather remarkable that many men who have been following for years what is one of the highest paid industries in the world should arrive at the Sanatorium without funds sufficient for providing the medical attendance, drugs, and nursing that extreme cases stand in urgent need of, to say nothing of board and lodgings. Extreme phthisis cases are not admitted to general hospitals, but are received at the Sanatorium, and are given a degree of care and skilled attention that they could not possibly obtain elsewhere, and, if the Sanatorium did nothing beyond this humane work, its existence would still be justified. The borehole sunk by the Government for the Institution has been an unqualified success, and ample water for domestic and gardening purposes is easily obtained. The water is of good quality, and the quarterly analyses of it show that the purity is being maintained. When the Sanatorium was opened the grounds were practically veld. Now, however, paths, drives, flower beds and lawns have been made. Over five thousand trees have been planted on the property, and a kitchen garden of over three acres is now supplying the Institution with all the vegetables required. During the year a further nineteen acres of ground were secured as a mule paddock. The amusement of the patients has always been difficult. Recreation involving light work, such as gardening, is not appreciated. Concerts are held on an average twice a month, and the recently installed billiard table has done much to lighten the monotony of life."

New Kleinfontein.

The result of the operations on the New Kleinfontein Company's property for August is as follows:—210 stamps; 30·423 days run; 4 tube mills; 52,800 tons milled; gold recovered, 17,458·255 fine ozs.; net value, £73,294 12s. 7d.; profit, £24,237 19s. 10d.; working costs (excluding development), 16s. 11·627d.; development to working costs, 1s. 7·357d.; total working costs, 18s. 6·984d.; capital expenditure, £891 9s. 9d.

THE OUTLOOK FOR THE 1913 GOLD OUTPUT.

What Will the Aggregate be?—An Examination of Returns for 1912 and 1913.

Earlier in the year it was predicted with every feeling of assurance that the gold output of the Transvaal for 1913 would establish a fresh record in production. The gold output for last year was valued at £38,711,581, and until the recent industrial crisis that the gold harvest of the Transvaal for the current twelve months would amount to close on forty millions sterling was regarded as a quite feasible assumption. On the eve of the crisis practically every mine on the Main Reef series had attained to a position of greater strength than ever hitherto, and the prospect cf increased production at most of the mines was undeniably good. There was in addition the fact that the Van Ryn Deep would commence production towards the end of 1913 to be taken into account. This mine has just announced an initial output worth over £57,000, and apparently it can be relied on to contribute a substantial quota to the Rand's production for a number of years to come. However, despite the generally satisfactory conditions of the mines, and especially the larger properties such as the Crown Mines, East Rand Proprietary, Randfontein Central, and despite the advent of the Van Ryn Deep into the list of crushing mines, the likelihood of the 1913 output establishing a fresh record for gold production in the Transvaal seems highly debateable.

Native Labour.

The native labour force shows further contraction in the August figures. At the end of last month the native labour force of the gold mines was only 158,223, the lowest recorded for a good many months past, as the following table of coloured employees on the various mining enterprises of the Transvaal since the beginning of last year shows:—

	Gold mines.	Coal mines.	Diamond mines.	Total.
1912.				
January	184,046	7,805	9,524	201,575
February	190,320	7,922	10,759	209,051
March	196,748	8,198	12,071	217,017
April	197,957	8,364	13,735	220,056
May	193,892	8,460	14,538	216,827
June	188,494	8,549	15,530	212,573
July	182,925	8,497	15,834	207,256
August	179,111	8,766	15,934	203,811
September	180,739	8,783	15,752	205,274
October	182,058	8,803	15,496	206,357
November	186,851	8,797	14,872	210,520
December	191,316	8,634	14,965	214,915
1913.				
January	200,090	8,789	13,912	222,791
February	207,662	8,877	13,918	230,457
March	207,733	9,009	15,041	231,783
April	205,424	9,053	15,626	230,103
May	197,644	9,062	15,345	222,051
June	188,094	9,060	14,654	211,808
July	170,242	9,403	13,378	193,023
August	158,223	9,236	13,172	180,631

It is to be feared that a considerable period of time will have to elapse before the position obtaining in the earlier months of the year with regard to coloured labour is regained.

1912 and 1913 Returns.

As to the actual output for the first eight months of last year the production was 6,073,982 fine ozs. of a value of £25,800,637. For the first eight months of this year the Transvaal has produced 6,023,896 ozs., valued at £25,587,927. Up to the end of June the output for 1913 was well ahead of that announced in respect of operations for the corresponding period of 1912, but as a result of the strike and the aftermath of the strike the first eight months of 1912 yielded about 50,000 ozs. more than the first eight months of this year.

The Profit Aspect.

Profits have of course suffered even more than revenue, but it is eminently gratifying to note that last month the group earnings again exceeded one million sterling.

A Shortage Anticipated.

Considering all these figures it seems pretty certain that both the output and the profit of Transvaal gold mines for 1913 will fall somewhat below the figures which at the beginning of the year were reasonably expected. At the same time the recuperative abilities of Rand mining are so great and the ore reserve positions of the various mines are so exceptionally strong the shortage may well be found to very much less than is generally anticipated.

The Rand's Deep Mines and Temperatures.

FIFTEEN MINES WORKING AT OVER 3,000 FEET IN DEPTH.

There were at the end of last year fifteen mines on the Witwatersrand which were working at a depth of over 3,000 feet. The deepest of these was the Jupiter, with the Simmer Deep second, the Cinderella Consolidated third, and the Village Deep fourth. In the accompanying table we state the deepest workings in these mines with the maximum temperatures recorded in respect of them. Considering the great depth at which numbers of these mines are working, it must be admitted that the temperatures recorded are very moderate.

	Feet	Degrees.
Central Rand—		
Jupiter	5,040	90
Simmer Deep	4,780	80
Village Deep	4,245	70
Robinson Deep	3,728	81
Simmer East	3,550	89
Crown Mines (Eastern Section)	3,434	81
City Deep	3,360	84
Eastern Rand—		
Cinderella Consolidated	4,627	86
Brakpan Mines	3,900	85
Angelo	3,522	65*
Driefontein	3,405	80†
Knight Central	3,350	85
Modderfontein Deep Levels	3,070	—
Cason	3,000	65*
New Comet	3,000	80†

* Shafts. † Average underground.

The Geological Society of South Africa.

At a special meeting of the Geological Society of South Africa, held at the Chamber of Mines this week, an amendment of the rules was agreed to whereby it was decided that the annual general meeting of the Society should be held on the last Monday of January in every successive year. The ordinary monthly meeting of the Society followed. A paper on "The Cassiterite Lodes of Leeuwpoort: The Para-genesis of the Lode-forming Minerals," was read by Mr. David P. MacDonald, who demonstrated that a definite succession of deposition might be made out for the lode-forming minerals. The deposit at Leeuwpoort, it was indicated, showed several most interesting features. The Chairman (Mr. A. L. Hall) thanked the lecturer for the many interesting, important and concrete results brought forward by him, his interesting and fairly definite establishment of minerals, and the ingenious way in which he had brought them into line with volcanic phenomena. Mr. Hall read a paper, entitled "Notes on the Tin Deposits of Embabane and Forbes Reef in Swaziland." In this paper the author gave a short account of the alluvial tin deposits in the area mentioned, which are derived from the pegmatites in the older granite. This was followed by a description of the tin occurrences at Fisher Reef, which are in the form of reef tin, and found both in the old granitic origin and in the schists themselves. The latter mode of occurrence, it was shown, is unusual, and may have an important bearing in connection with discoveries among schist formations which have been intruded by granite. Dr. Corstorphine followed with a summary dealing with the paper by Dr. S. J. Shand on "The Terraces of Eerste River at Stellenbosch."

AUGUST OUTPUT IN DETAIL.

Increased Returns Despite Unrest and Decreased Native Labour Force—Van Ryn Deep's Addition—Outside Districts' Small Improvement.

The following are the salient figures of the August output :—

Total output	728,096 ozs.
Value	£3,092,754
Increase	72,707 ozs.
Value	£308,837
Rand output	697,686 ozs.
Value	£2,963,581
Increase	72,579 ozs.
Value	£308,295
Outside districts	30,410 ozs.
Value	£129,173
Increase	128 ozs.
Value	£542
Total stamps	9,952
Decrease	63
Rand	9,420
Decrease	65
Outside	532
Increase	2

The Witwatersrand output of 697,686 ozs., value £2,963,581, shows an increase of 72,579 ozs., value £308,296, compared with July, but the Van Ryn Deep contributed to this increase over fifty thousand sterling, so that the August yield is not really such a large advance as it appears. The big decline in miscellaneous producers is accounted for by an over-declaration made in July of £12,000 odd. The outside districts return of 30,410 ozs., value £129,173, shows an increase of 128 ozs., value £542, and is practically the same as in the previous month and calls for little or no comment, for what is plain is that the declaring companies account for all the decreases and miscellaneous producers for the bulk of the increase. The Rosetta at Barberton has made its last return for some time, having made a final clean up. Turning to the daily averages, it will be seen that the daily output of £95,599 is a sharp improvement on the July average of £85,654, but then it is six thousand pounds behind what it was for June and eleven thousand four hundred less than the average for April. The average daily profit for the Witwatersrand, as disclosed by the group figures, is more encouraging, for while July yielded no more than £24,284 August brought out £32,518. It is true that excepting July it is the lowest average for fifteen months, but when the great shortage of native labour is considered the figures are very creditable.

THE LABOUR POSITION.

The figures for the past three months of the numbers employed by members of the W.N.L.A. at the last day of each month read :—

	June.	July.	August.
Gold mines	188,094	170,242	158,223
Coal mines	9,060	9,403	9,236
Diamond mines ..	14,654	13,378	13,172
Totals	211,808	193,023	180,631

STAMPS.

The fluctuation in the number of stamps employed in the Transvaal shows a total decrease of 63, arrived at as follows:—Rand: Decreases: Knight Central, 20; Randfontein Central, 50; Robinson Deep, 50; miscellaneous, 15; total decrease, 135. Increases: New producer, Van Ryn Deep, 60; New Kleinfontein, 10; total increase, 70; net decrease, 65. Outside: Miscellaneous (increase), 22; Sheba Rosetta (decrease), 20; total increase, 2. Total decrease, 63.

TWELVE LEADING COMPANIES.

	Stamps.	Tube Mills.	Tons Crushed.	Value.
Crown Mines	660	25	193,000	£279,339
Randfontein Central	850	29	211,756	270,610
East Rand Proprietary .	820	25	151,500	231,378
Ferreira Deep	245	6	53,970	108,151
Robinson	250	6	55,700	103,955
New Modder	180	7	39,500	83,060
Robinson Deep	150	10	55,300	78,897
Rose Deep	300	7	61,300	78,536
New Kleinfontein . .	210	4	52,800	74,157
Nourse Mines	260	7	48,300	73,991
Simmer and Jack	320	7	65,900	73,724
Geldenhuis Deep	300	7	50,200	72,645
Totals ...	4545	139	1,039,226	£1,528,443

GROUP PROFITS.

The following are the profits returned for June, July and August by the mines controlled by the different groups :—

	June. £	July. £	August. £
Rand Mines Eckstein ...	£226,811	£193,835	£220,941
Rand Mines Subsidiaries	271,834	228,337	244,835
Gold Fields group	99,830	53,955	95,037
Robinson group	98,294	79,546	94,149
Barnato group	84,369	59,316	89,545
East Rand Proprietary ..	92,007	47,126	82,513
General Mining group .	65,064	46,849	66,284
Neumann group	62,196	41,038	60,767
Kleinfontein group	-	*	24,238
Cons. Mines Selection .	26,889	8,005	21,768
Goerz group .	8,959	3,561	7,968
Totals	£1,036,253	£761,571	£1,008,048

* Kleinfontein group loss, £9,753.

INCREASES AND DECREASES.

The following returns of the August output have been filed with the Chamber of Mines. Increases and decreases compared with July are appended:—

The Witwatersrand.

	July. £	August. £	Increase. £	Decrease. £
Aurora West United	17,696	19,484	1,788	-
Bantjes Consolidated	33,791	28,247		5,544
Brakpan Mines	54,932	68,851	13,919	
City Deep	70,096	66,299	-	3,797
City and Suburban	66,082	44,057		22,025
Consolidated Langlaagte	55,233	58,003	2,770	
Crown Mines	273,333	279,339	6,006	
Consolidated Main Reef	32,712	31,395		1,317
Durban Roodepoort Deep	33,052	34,190	1,138	
Durban Roodepoort	14,417	15,067	650	—
East Rand Proprietary	175,686	231,378	55,692	—
Ferreira Deep	104,944	108,151	3,207	
Geduld Proprietary	4,464	22,887	18,423	-
Geldenhuis Deep ...	70,495	72,645	2,150	
Ginsberg	17,713	21,035	3,322	-
Glencairn	14,944	15,627	683	
Jupiter	34,530	34,802	272	-
Knight Central	23,558	25,074	1,516	-
Knights Deep	43,059	69,395	26,336	-
Langlaagte Estate	49,040	49,622	582	-
Luipaardsvlei Estate	15,899	18,401	2,502	-
Main Reef West ..	26,366	29,590	3,224	—
May Consolidated	13,639	12,599	--	1,040
Meyer and Charlton	32,444	34,470	2,026	
Modder. B. .	66,524	68,048	1,525	
New Heriot	20,916	23,150	2,234	—
New Modderfontein	68,732	83,060	14,328	
New Primrose	33,778	34,870	1,092	
New Goch	23,018	26,786	3,768	

	July. £	August. £	Increase. £	Decrease. £
Nourse Mines	70,572	73,991	3,419	—
New Kleinfontein	55,870	74,157	18,287	—
New Rietfontein	15,347	16,171	824	—
New Unified	14,379	15,581	1,202	—
Princess Estate	25,741	28,400	2,659	—
Randfontein Central	237,898	270,610	32,712	—
Roodepoort United	22,194	22,933	739	—
Robinson	90,362	103,955	13,593	
Robinson Deep	72,101	78,897	6,796	
Rose Deep	74,140	78,536	4,396	
Spes Bona	5,365	5,543	178	—
Simmer Deep	40,884	45,676	4,792	—
Simmer and Jack	60,602	73,724	13,122	—
Van Ryn Deep	—	57,514	57,514	—
Van Ryn Estate	34,780	50,344	12,564	—
Village Deep	52,498	58,202	5,704	—
Village Main Reef	63,159	66,944	3,785	—
Vogelstruis Estate	13,746	14,143	397	—
West Rand Central	3,645	3,878	233	
West Rand Consolidated	38,523	38.259	—	264
Witwatersrand	40,234	44,780	4,546	—
Witwatersrand Deep	63,300	67,157	3,857	—
Wolhuter	35,753	41,445	5,692	—
Miscellaneous producers	29,965	6.218	—	3,135
Outside Districts.				
Barrett	918	803	—	115
Ceylon Lydenburg	1,308	1,201	—	106
Glynn's Lydenburg	8,389	8,300	—	89
Nigel	20,453	20,202	—	251
Quest	2,944	2,995	51	—
Sheba	13,758	13,975	217	—
Sheba-Rosetta	799	692	—	107
Sub Nigel	8.266	7,582	—	684
Transvaal Gold Mining Estates	42,439	41,730	—	709
Worcester	5,327	5,594	267	—
Miscellaneous producers	24,030	26,098	2,068	—

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	14,879	80	4,587	£19,484
Bantjes Consolidated	20,260	100	6,650	28,247
Brakpan Mines	50,006	160	16,209	68,851
City Deep	33,900	150	15,608	66,299
City and Suburban	23,960	155	10,372	44,057
Consolidated Langlaagte Mines	44,100	100	13,655	58,003
Consolidated Main Reef	21,001	100	7,391	31,395
Crown Mines	193,900	660	65,762	279,369
Durban Roodepoort	14,266	90	3,547	15,067
Durban Roodepoort Deep	21,260	100	8,049	31.190
E.R.P.M.	161,500	820	54,471	231.378
Ferreira Deep	53,970	215	25,461	108,151
Geldenhuis Deep	50,200	300	17,102	72,645
Ginsberg	14,895	80	4,952	21,035
Glencairn Main Reef	20,745	160	3,679	15,627
Geduld Proprietary Mines	14,760	60	5,388	22,887
Jupiter	31,100	120	8,193	*34,802
Knights Deep	105,000	400	16,337	69,395
Knight Central	21,930	100	5,903	25,074
Langlaagte Estate	50,217	200	11,682	49,622
Luipaardsvlei Estate	17,450	60	4,332	18,401
Main Reef West	19,132	100	6,966	29,590
May Consolidated	15,830	100	2,966	12,599
Meyer and Charlton	14,910	75	8,115	34,470
Modderfontein B.	33,600	80	16,020	68,019
New Goch	28,140	120	6.306	26,786
New Heriot	12,700	70	5,450	23,150
New Kleinfontein	52,800	210	17,458	74,157
New Modderfontein	39,500	180	19,554	83,060
New Primrose	25,200	160	8.209	34,870
New Rietfontein Estate	16,700	120	3,807	16,171
New Unified	12,550	60	3,668	15,581
Nourse Mines	48,300	260	17,419	73,991
Princess Estate	22.500	60	6,686	28,400
Robinson	55,700	250	24,473	103,955
Robinson Deep	55,300	150	18,574	78,897
Randfontein Central	211,756	850	63,707	270,610
Roodepoort United Main Reef	23,436	50	5,390	22,933
Rose Deep	61,300	300	18,489	78,536
Simmer Deep	55,900	180	10,753	*45,676
Simmer and Jack	65,900	320	17,356	*73,724
Spes Bona Tribute	5,729	40	1,305	5,543
Van Ryn Deep	44,800	60	13,540	57,514
Van Ryn Gold Mines	39,010	135	11,852	50,345
Village Deep	40,800	180	13,702	58,202
Village Main Reef	36,300	220	15,760	66,944
Vogelstruis Estates	13,395	80	3,329	14,143
West Rand Central	2,417	20	913	3,878
West Rand Consolidated	26,000	100	9,007	38,259
Witwatersrand	36,700	220	10,542	44,780
Witwatersrand Deep	45,650	245	15,810	67,157
Wolhuter	29,750	120	9,757	41,445
Miscellaneous Producers	—	65	1,464	6,218
Outside Districts.				
HEIDELBERG—				
Nigel	13.000	75	4,756	20,202
Sub-Nigel	5,150	25	1,785	*7,582
BARBERTON—				
Barrett	—	—	189	803
Sheba-Rosetta	—	—	163	692
Sheba	6,560	65	3,290	13,975
Worcester Exploration	6,100	40	1.317	5,594
LYDENBURG—				
Ceylon Lydenburg	641	5	283	1,202
Glynn's Lydenburg	3,825	20	1,051	8,300
Transvaal G.M. Estate	12.550	75	9,821	41,730
KLERKSDORP—				
Quest	4,128	35	765	2,995
Miscellaneous producers	—	192	6,144	26,098

* Jupiter includes 304 ozs., value £1,291, taken from production and added to reserve. * Simmer and Jack includes 175 ozs., value £741, taken from production and added to reserve. * Simmer Deep does not include 250 ozs., value £1.062, taken from reserve and included in declared output. * Sub-Nigel does not include 150 ozs., value £639, taken from reserve and included in declared output.

Coal Mines Regulations.

We have received from the British Home Office a copy of regulations which the Secretary of State proposes to make under Section 86 of the Coal Mines Act, 1911. These are as follows: (1) During the process of drilling holes in ganister, water or other efficient means shall be used to prevent the escape of dust into the air. (2) After a shot has been fired in any place for the purpose of breaking ganister, no person shall return to that place until the air in such place has been cleared of the dust arising therefrom, or unless he uses an efficient respirator or other apparatus to prevent the inhalation of dust. Blasting of ganister shall as far as practicable be so arranged that men working in other places shall be exposed as little as possible to the dust. (3) No person shall, in any part of the mine, remove or cause or allow to be removed the stone broken, if dry and dusty, unless it has been effectively damped so as to prevent the escape of dust into the air during removal. (4) Except where the stone is so saturated that dust is not given off in the breaking, all stone-breaking machines used at the mine shall be provided and kept provided with an efficient watering or other arrangement to prevent the escape of dust into the air, and no person shall work, or cause or allow to be worked, any such machine unless such arrangement is provided and effectively used. (5) It shall be the duty of the manager to see that all appliances or other things necessary to enable the above regulations to be carried out, are provided and are maintained in working order. (6) It shall be the duty of all persons employed in the mine to comply with the requirements of the regulations, and with such instructions as shall be given to them by the officials with a view to such requirements being carried out, and it shall be the duty of all persons employed in the mine, whether workmen or officials of the mine, to report any breach of these regulations to the manager.

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STANDARDIZATION OF METALLURGICAL AND MINING TERMS.

Important List of Terminological Reforms and Recommendations.

THE Council of the Chemical, Metallurgical and Mining Society of South Africa has adopted the following report of its Sub-Committee on this subject, and authors and contributors to its proceedings are requested to comply with its recommendations when submitting papers and contributions to the Society:—

This sub-committee was appointed by the Council to consider the advisability of furthering the standardization of metallurgical and mining terms and phrases. After considerable discussion, it was decided that where variations in spelling and in application exist in the use of such terms, one form should be recommended and adopted in all papers, etc., published by the Society, even although alternative forms be not inaccurate. It will be evident that many of the words have reference *mainly to practice on the Rand*. Where the meaning of any word is not clear, an explanatory note is attached.

1. Except when otherwise necessary, the following words shall be treated as collective nouns, and therefore used in the singular: Sand; tailing; fine; black sand; residue; ash; pyrite (FeS_2); concentrate; slag; sulphide; telluride; slime; chloride.

2. The following terms shall be used in the plural form: Shavings; skimmings; steamings; sweepings; drillings; reserves.

3. Preference should be given to the singular form in: Precipitate; bin; cost; profit; value.

4. Such abbreviations as the following shall not be printed in the plural: Oz.; kg.; lb.; in.; dwt.; gal.; gr.; m.; cc.; gm.; cm.; mm.

5. As far as practicable the following terms shall be avoided: Dirt (mullock or muck) (broken ore or waste), bokopan (truck), cheesa stick (firing stick); lasher (shoveller); lashing (shovelling).

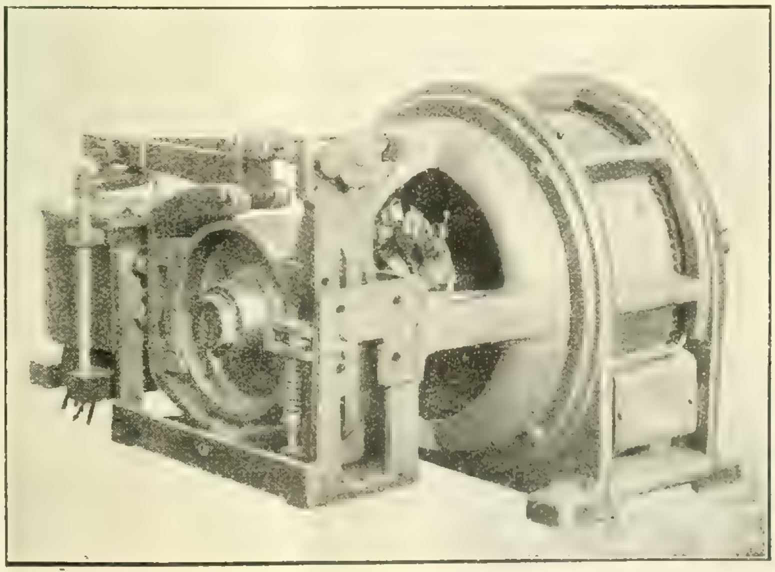
6. The following spelling shall be used consistently: By-product; shoot (the geological term); by-pass; hydraulicking; [illegible]; chute (passage or opening through which material is guided); katir; gram.; dike; rise.

7. "Vat" shall be used in place of "tank." "Cyaniding" shall be used in place of "cyanidation." "Breaking and sorting" shall be used in place of "crushing and picking." (Note. "Crushing" equals "stamp milling" plus "tube milling.") "Ore slime" to distinguish from "gold slime." "Extraction" shall refer to metal extracted from ore. "Precipitation" shall refer to metal precipitated from solution. "Recovery" shall refer to metal won in a form suitable for the market.

8. In referring to screening, it should be stated whether number of holes refers to the square or linear inch, and the diameter of the aperture in decimals of an inch should be given; battery screening should have the gauge of wire in decimals of an inch and the percentage of discharge area mentioned, whenever possible. Temperatures shall be expressed in degrees centigrade (with the equivalent in fahrenheit in parenthesis). Cyanide and alkali strength shall be expressed in terms of specified reagents, thus: 0·05% KCN; 0·02% NaOH; 0·02% CaO.

9. A ton shall mean 2,000 lb. A fluid ton shall mean 32 cub. ft.

10. The following scheme illustrates the nomenclature of Rand reduction works:—Reduction works: Breaking plant; crushing plant; cyanide plant; stamp mill; tube mills or other secondary crushing machines; sand plant; slime plant; sets of stamp batteries.



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THE ROOIBERG COMPANY'S YEAR.

Some Remarkable Improvements—Ore Reserves and New Plant Strong Financial Position.

A PARTICULARLY interesting report has just been issued by the Rooiberg Minerals Development Company for the year ended with June 30th last. Not only is this document certain to attract considerable attention on the grounds that Rooiberg and Zaaiplaats are the two leading cassiterite ventures of South Africa as yet discovered, but it is of interest also because it records remarkable progress all round at the mine when results are compared with those secured in the preceding twelve months. Thus the tons milled were increased from 20,799 to 35,917, and although the grade of ore milled was 1·38 per cent. less, the revenue per ton improved by 1s. 4d., from £5 1s. 7d. to £5 2s. 11d. This was brought about by the highly gratifying improvement in extraction—from 57.97 per cent. to 72.85 per cent. Working costs were reduced by 16s. 3d. per ton, from £3 10s. 1d. to £2 13s. 10d. The net result is an improvement in profit of £55,472, the 1911-1912 earning being £32,721, and that for the 1912-1913 period £88,194. The decline in the grade of the ore milled, it should be explained, is principally due to the retreatment of 14,175 tons of accumulated products from the old mill. The value of these accumulations was 2.51 per cent., and the value of "run-of-mine" ore milled during the year was accordingly 4.24 per cent. as contrasted with 4.94 per cent. during 1911-1912. Mr. Way, the consulting engineer, discusses questions relating to ore reserves and the work of the new plant in detail. His remarks under these headings are particularly important, and we therefore quote from his report on these matters at length. Of the ore reserve position, Mr. Way writes:—

> The Chairman, in his speech at the last annual meeting, stated that the board had decided to omit in future any statement of the ore reserve. I give, as a matter of interest, the following information with regard to the ore available, as your technical staff has to be guided by these figures in advising you on matters affecting tonnage, grade and general mining policy. The fully developed ore reserve at the 30th of June, 1913, amounted to 22,000 stoping tons of an average assay value of 5·32 per cent. metallic tin. The corresponding figures for 30th June, 1912, converted to the same basis, were 24,000 stoping tons of an average assay value of 5·38 per cent. metallic tin. The blocked-out ore reserve consequently shows a reduction of 2,000 tons, and of 0·06 per cent. metallic tin assay value. It has been pointed out in previous reports that a much larger tonnage of ore is indicated by the fully developed ore reserve. This is clearly shown by the following statement summarising the sources of the ore mined from the commencement of milling operations to the 30th of June, 1913, a period of four years and three months. Sources of ore mined for period of four years and three months ended 30th of June, 1913: Ex ore reserve, 16,116 tons, 18·6 per cent.; ex supplementary fillings and lodes in excess of reserves, 50,129 tons, 57·9 per cent.; ex prospecting, etc., 20,347 tons, 23·5 per cent.; totals, 86,592 tons, 100 per cent. This shows that, since the commencement of milling, for every ton of ore mined from reserve, 4·4 tons have been obtained from other sources. The figures for the year under review are even more favourable, showing as they do that for every ton which came from the ore reserve five tons were obtained from other sources. In view of the constant occurrence of these supplementary fillings in every stope which has been opened out, and of the exact similarity of the blocked out ground to the ground already stoped, I have included in my present summary of the total ore reserve a figure for the probable ore which will be obtained from supplementary fillings and other sources. My estimate of the total ore reserve of the mine as at 30th of June, 1913, is therefore as follows:—Certain ore reserve: Blocked out ore reserve, 22,000 mining tons, 5·32 per cent. metallic tin; ore at grass, 3,800 mining tons, 8·80 per cent. metallic tin; accumulated middlings and slimes, 30,300 mining tons, 2·50 per cent. metallic tin; totals, 56,100 mining tons, 4·03 per cent. metallic tin. Probable ore reserve: Probable ore to be obtained from supplementary fillings, etc., based on results of past four years, less 10 per cent., 87,100 mining tons; total certain and probable ore reserve as at 30th of June, 1913, 143,200 mining tons. Allowing 15 per cent. for sorting, this equals 121,720 milling tons, or (say) 3½ years ahead of mill on a basis of 3,000 tons per month. It is impossible to place a definite value on the ore to be obtained from supplementary fillings, but, judging by past results, it would appear that the value of the total ore reserve lies between 3·5 per cent. and 4 per cent. metallic tin. The percentage of extraction obtained in the works depends on the tonnage of metallic tin which enters the mill, and on the amount which is recovered and sold as concentrates. The latter quantity being the actual amount of tin sold, is obtained with great accuracy, but the determination of the former figure presents considerable difficulty. It depends on the tonnage of ore which enters the mill and on the value of this ore. The first of these figures is now obtained by passing all ore through a tipping box, and the results thus arrived at may be considered correct within 1 or 2 per cent. This result is as nearly accurate as it is possible to obtain without incurring further capital expenditure. The value of the ore can be determined in two ways, namely, by an assay of a sample of pulp leaving the battery (screen heading value) or by an assay of a sample of the tailing pulp leaving the mill, plus the amount recovered in the mill (built-up heading value). The values obtained by these two methods ought to agree if both sampling and assaying were perfect. Up to the present we have not been able to secure this agreement, owing to the difficulties in obtaining correct samples and assays, the screen heading value always being higher than the built-up heading value. In order to obtain accurate samples of the headings and tailings, automatic samplers have now been installed (since 1st August, 1913), and I consider that this will effect a great improvement. The correct assaying of these samples, however, presents considerable difficulties, as is demonstrated by the following summary showing the results obtained by four assayers of first-class reputation on 10 samples of headings and 10 samples of tailings:—
>
> | Assayers. | A. | B. | C. | D. |
> |---|---|---|---|---|
> | Average of 10 heading samples ... | 3·25% M.T. | 2·93% M.T. | 3·[illegible]6% M.T. | 3·40% M.T. |
> | Average of 10 tailing samples ... | 0·67% M.T. | 0·32% M.T. | 0·267% M.T. | 0·545% M.T. |
> | Theoretical extraction indicated.. | 79% | 89% | 90% | 84% |
>
> It will be noticed that if A's result be accepted as correct, the extraction is considerably lower than if the other assayers' results are taken, and also that the disagreements between the different results expressed as percentages of the highest results, are much greater in the case of the tailing assays than in the case of the heading assays. So wide and disconcerting are these differences (for it must be borne in mind that with tin at £200, 0·1 per cent. is worth 4s. per ton, and the variations between the highest and the lowest of the above heading assays is equivalent to 12s. 9d. per ton), that I obtained a carefully-prepared sample of the finest tin slime which is handled in the works. This was specially mixed and divided into four samples. It was thought that owing to the extraordinary fineness of the cassiterite and the gangue that there could be no possibility of larger particles of cassiterite vitiating even the most carefully-prepared samples, and yet the results are widely divergent, and are as follows:—Result: A, 2·51 per cent.; C, 2·04 per cent.; D, 2·7 per cent.; E, 2·29 per cent. It will thus be seen that not only is the technical staff faced with the great difficulty of obtaining this metal by the most carefully-prepared methods of wet concentration, but in addition to this it would seem that they can never be sure of the value of the original ore or of the tailing. My investigations into the question of assaying are not yet complete, but so far as they have gone they indicate that our own methods are probably the more correct, although they tend to show higher ore values and lower percentages of extraction. This most important question will continue to receive careful investigation. In calculating the percentages of extraction during the past year the screen heading sample has been taken as the value of the pulp entering the works. With regard to methods of extraction it is anticipated that in the near future a chemical process will be perfected which will be commercially successful. Samples of ore have been sent to England for testing purposes. The year under review coincides with the first year's steady running of the new plant, and it is interesting to compare the profits won during the year with those which would have been obtained from the old plant on the same grade of run-of-mine

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ore and with the same price of tin. The old plant was capable of treating 20,000 tons per annum and of extracting 57·97 per cent. of the tin contents at an inclusive cost of £3 10s. 1d. per ton. The profit which would have been earned under the 1912-13 conditions is therefore arrived at in the following manner:—20,000 short tons at 4·24 per cent. metallic tin (value of run-of-mine ore 1912-13) and 57·97 per cent. extraction = 438·9 long tons metallic tin. 438·92 long tons metallic tin at £218 (average price 1912-13) = revenue of £95,685. 20,000 tons at £3 10s. = working costs of £70,000. Working profit = £95,685 − £70,000 = £25,685. The profit actually earned by the new plant amounted to £88,193, so that the additional profit due to this plant is £62,508. The technical position and prospects of your company are very satisfactory, with the possible exception of development in depth on the 310 and 410 feet levels, which has not as yet yielded such good results as have been obtained on the horizon above the 210 feet level. It must, however, be remembered that only a comparatively small amount of development has been done on the lower levels, and that the 210 feet level when first opened up also yielded disappointing results, which, as subsequent work has proved, did not truly represent the value of this level. Only 51 feet have been driven on the 410 feet level, so that no definite opinion can be given either way. I anticipate that continued development in the lower horizon will lead to the discovery of ore bodies commensurate in value with those found nearer the surface. Prospecting work continued throughout the year to disclose new bodies of high-grade ore over a continually increasing area. The plant is running very smoothly and will probably yield a higher extraction during the current year. The water position is quite secure, there being 24,000,000 gallons in the dam on the 30th of June, 1913. Finally, I consider that the working results which will be obtained during the current year will show an improvement over the results of 1912-13. The actual profits earned will depend, of course, on the price of the metal.

The financial position of the company is reflected in the Directors' report. The revenue from tin concentrates amounted to £184,867 19s. 2d.; the expenditure on working account was £96,674 7s. 4d.; the working profit for the year was thus £88,193 11s. 10d. A further £860 4s. 1d. was derived from interest, etc., making a gross profit of £89,053 15s. 11d., which, together with £13,731 7s. 4d., brought forward from last year, was dealt with as follows: Interim dividends Nos. 4 and 5 of 15 per cent. and 20 per cent. respectively, £63,000; appropriated for expenditure on fixed assets, £5,535; directors' remuneration, £3,150; Government tax, £4,035; reserve fund, £10,000; carried forward, £17,063; total, £102,785. A reserve fund has been established to provide for the continuance of development and exploration on an adequate scale should working conditions at any time prove less favourable than those at present obtaining, and an amount of £10,000 has been set aside from the year's profit for this object. In accordance with the policy agreed upon, all expenditure upon shaft sinking, development and exploration, amounting to £30,073, has been charged direct to working costs. The balance of concentrates suspense account appearing in last year's accounts was transferred to profit and loss account at the close of the year. The average price for the year realised for sales of metallic tin was £218, as compared with an average of £197 for the previous year.

Sheba and Rosetta.

The following are the results of the Sheba and Rosetta working for August:—Sheba: Crushings for the month, 6,560 tons, yielding 3,290 ozs. fine gold; estimated profit, £4,319. Rosetta: 156 ozs. fine gold.

Transvaal G.M. Estates.

The following are the particulars of the Transvaal Gold Mining Estates output for August:—Central Mines: Tons crushed, 10,400; yield, 8,322·320 fine ozs. Elandsdrift Mine: Tons crushed, 680; yield, 800·258 fine ozs. Vaalhoek Mines: Tons crushed, 1,470; yield, 624·957 fine ozs. Estimated value of month's output, £40,898; estimated profit for the month, £26,058.

Brakpan Mines.

The following are the results of operations at Brakpan Mines: Stamps working, 160; running time, 23 days; ore crushed, 50,006 tons; tube mills working, 8; ore hoisted, 52,578 tons; ore from dump, 1,960 tons; waste sorted, 10·33 per cent.; fine gold declared, 16,209·35 ozs.; value declared, £68,258; equal to 27s. 3d. per ton milled; working costs, £46,490; equal to 18s. 7d. per ton milled; working profit, £21,768; equal to 8s. 8d. per ton milled.

Luipaardsvlei Estate.

The following is the result of operations for August:—60 stamps ran 30·088 days, crushing 17,450 tons, yielding 1,880 ozs. fine gold. Three tube mills ran 30·228 days, yielding 632 ozs. fine gold. Sands treated, 12,290 tons, yielding 1,316 ozs. fine gold. Slimes treated, 5,160 tons, yielding 504 ozs. fine gold. Profit from operations, £2,757. Sundry revenue, £900. Total profit, £3,657. Working costs, 17s. 8d. per ton. Total working expenses, £15,437. From the above profit there remains to be deducted a final sum of £674 for strike insurance effected during the late disturbances.

Movement to Restrict Damaraland Diamond Output.

Diamond trade circles are much interested in an impending meeting of the directors of the German Diamond Regie to consider the question of restricting the output from the Damaraland fields. It is believed that if a voluntary arrangement to this effect is not reached, an application will be made to the Imperial Chancellor to fix the output for the year from October 1st. The producers, however, are disinclined to restrict production, thinking the improved political situation will lead to increased sales.

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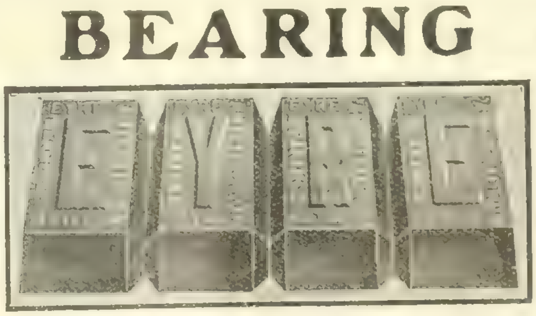

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Rhodesian Section.

LATEST MINING NEWS.

Amalgamated Properties—Susanna Mines—Rhodesia Consolidated—Mozambique Labour —A Gwanda Discovery—Chamber of Mines Meeting.

The mines of the Amalgamated Properties at Shagari have been shut down temporarily. The men have been discharged, and a caretaker will be put in charge. The properties affected are Ardlanzer, Jane Anna, Turkois No. 9, and Turkois Extension.

* * * *

Susanna Reef: Winze 11 to 12 north shoot has been sunk to a depth of 82 ft.; at 75 ft., reef 62 ins. wide, assays 34·8 dwts. This includes north shoot and Spur Reefs. A sample at 75 ft. over 17 ins. of reef, south side of winze, north shoot, only assays 3·3 dwts. Winze 10 to 11 level, south shoot, has been sunk to a depth of 56 ft. At 45 ft. reef, 30 ins. wide, assays 18·5 dwts. At 50 ft. reef, 16 ins. wide, assays 29·1 dwts. No. 4 level, south shoot has been advanced to a distance of 43 ft. from winze. Will cease work here until such time as labour is more plentiful.

* * * *

The report of the Rhodesia Consolidated for the 18 months ended March 31 last disclosed a loss of £10,099, reducing the balance to the credit of profit and loss account to £26,605. Acting on the advice of the company's engineers, further mining claims were abandoned during the period under review. The unsatisfactory conditions of the mining markets precluded any attempt to turn to account the important claim-holding (600 claims) controlled by this company on the East Rand or any of its mining property in Rhodesia.

* * * *

Reuter's Lisbon correspondent telegraphs that an agreement has been signed by the Portuguese Government, the Chartered Company, and the Rhodesia Native Labour Bureau, on the subject of recruiting natives in Mozambique for Rhodesia. The agreement relates to recruiting in the Tete district of Mozambique. A Portuguese curator will be appointed to superintend the fulfilment of contracts and to ensure the return of labourers at the end of their term. Provisions are to be made for the issue of passports, and for the entry of a quantity of baggage duty free, when the labourers re-enter Mozambique. The compulsory repatriation of clandestine emigrants and similar matters are also dealt with.

* * * *

A Gwanda correspondent of the *Rhodesian Mining Review* writes:—It is pleasing to report the finding of another very promising gold reef by Mr. McConville. The site is that of a small ancient working near the Jessie mine. The reef, only two inches in thickness on the surface, has widened to some three feet at a depth of eight feet, and in places is remarkably rich. I am led to believe that from a trial crushing at the Poort mines, the gold recovered was phenomenal, the plates having to be cleaned several times an hour. Actual values are not yet available. Mr. McConville who pegged the Champion mine, has long been associated with this district, and he and his partner are to be congratulated on their present success.

* * * *

The quarterly general meeting of the Rhodesia Chamber of Mines was held in the Library Building on September 2nd, Mr. P. B. S. Wrey presiding. The President, in moving the adoption of the report and accounts for the half year ended June 30, 1913, gave a summary of the financial position. The receipts amounted to £1,348 18s. 11d., and the expenditure to £818 5s. 4d. The cash balance on the 30th June amounted to £2,944 19s. 6d. Proceeding, he said that the three important economic questions affecting the industry referred to by the late President at the annual meeting were receiving attention. With reference to capitation fees, which bore so heavily on the mining industry, attention had been drawn to the matter at the annual meeting of the Rhodesia Native Labour Bureau and the Board of the Bureau were asked to consider the question and see whether it was not possible to reduce the capitation fees. With regard to the next important item, viz., royalty, it would be remembered that the Chamber addressed the B.S.A. Co. on the 12th January last. No reply had been received and they still remained as regards this form of taxation the most heavily taxed mining community of any which existed in the British Dominions. The Executive had gone fully into the matter, and the whole question would be brought up again before the Company. On the question of railway rates Mr. Wrey spoke of the representations made to the railway companies. The representations, he said, had had some result. At the request of the railway companies the Chamber forwarded a list of items of a heavy undamageable nature principally utilised in mining, and it had been calculated that if the reduction in these articles were granted to the mining industry the saving thereon in working costs per ton crushed would probably be in the neighbourhood of 2d. per ton, or a total saving to the industry of something like £15,000 per annum. The companies had been informed that this could not be considered in any way to meet the representations of the Chamber for a substantial moderation of the burden of railway rates now borne by the industry. The supply of native labour continued to be plentiful, owing in many cases to the restricted development operations of non-producing mines. On this class of mines there were at present 9,000 employed as against 12,000 in the previous year. The actual number employed on mines during the period under review was 31,109 as against 35,589 for the corresponding period of last year. After referring to recent legislation, Mr. Wrey proceeded: The following are the details with reference to the gold and mineral output; the returns of gold, diamond and mineral output for the first six months of the current year show a satisfactory increase in value of £85,894; in gold, an increase amounting to 21,439 ounces in weight and £89,655 in value compared with the corresponding period of last year is shown. The increase in coal sales was £2,900; in tungsten ore £327, and in the value of diamonds declared £5,877. Decreases of £1,770, £1,582 and £9,513 were recorded in silver, lead, and chrome ore respectively. The total value of the production for the first six months of the year was £1,521,387, as compared with £1,435,493. The output of gold for July constituted a record for any one month's operations. The Chamber have every reason to believe that the present rate of output will be maintained, if not somewhat slightly increased, towards the end of the year and in the forthcoming year they have reason to believe that the general tendency of the output will be distinctly higher.

Rezende Mines.

The results for the month of August are:—Estimated profit: Central section, £1,790; old west workings, £590; Penhalonga section, £249; total estimated profit, £2,629.

Cassiterite in the Belgian Congo.

Whilst the great copper deposits of Katanga, in the Belgian Congo, have engaged attention and attracted capital (British as well as Belgian) for some years past, the cassiterite deposits of that great tract of territory have been comparatively neglected. Curiously enough, the native, although he has for generations reduced copper, has paid no attention to tin, and it is recorded that much surprise was evidenced by the aborigines when they witnessed the first "run" of metal in Bas Katanga.

THE AUGUST OUTPUT: GROUP RETURNS.

Recovering from the Strike—All-Round Improvements.

Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of August:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep	300	7	61,300	16/ 5	18,489	£27,515
Geldenhuis Deep	300	7	50,200	24/ 9	17,102	9,839
Nourse Mines ...	260	7	48,300	21/11	17,419	20,475
Ferreira Deep ...	245	7	53,970	19/ 7	25,461	54,397
Crown Mines ...	660	26	193,000	15/ 4	65,762	128,654
Durban Rood. D.	100	3	24,260	24/ 7	8,049	3,955
Totals & averages	1865	57	431,030	18/ 5	152,282	£244,835

The following are the results of crushing operations of Central Mining Companies for the month of August:—

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Modder B.	80	5	33,600	16/ 1	16,020	£40,486
New Modder ...	180	7	39,500	18/ 4	19,554	46,269
City Deep	150	9	33,900	26/ 6	15,608	20,439
Village Deep ...	180	7	40,800	21/ 7	13,702	13,789
Village Main ...	220	6	36,300	18/ 9	15,760	32,152
Robinson	250	6	55,700	13/ 6	24,473	65,266
Bantjes	100	3	20,260	25/ 1	6,650	2,543
Totals & averages	1160	43	260,060	19/ 2	111,767	£220,944

The Albu Group.

The August operations of the producing mines of this group were as follows:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West	80	14,879	£13,703
Meyer and Charlton	75	14,910	13,256
New Goch	120	28,140	21,586
Roodepoort United	50	23,436	20,594
Van Ryn	135	39,010	27,840
West Rand Consolidated ...	100	26,000	28,877
	560	146,375	£125,856

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	18/ 5·0	£19,487	£5,784
Meyer and Charlton	17/ 9·4	34,370	21,114
New Goch	15/ 4·1	26,734	5,148
Roodepoort United	17/ 6·9	22,945	2,351
Van Ryn	14/ 3·3	50,432	22,592
West Rand Consolidated ...	22/ 2·6	38,172	9,295
		£192,140	£66,284

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep ...	45,650	£66,339	£28,945
Wolhuter	29,750	40,943	14,111
Consolidated Main Reef...	21,004	31,010	9,005
Main Reef West	19,132	29,287	7,340
Knight Central	21,930	24,754	1,366
Total for group ..			£60,767

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for last month of the undermentioned companies of the Consolidated Gold Fields group:

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	65,900	17,181	£35,442
Robinson Deep	150	10	55,300	18,270	32,392
Knights Deep	400	11	105,000	15,822	12,098
Simmer Deep	180	9	55,900	11,003	4,066
Jupiter	120	6	31,100	8,193	9,659
Sub Nigel	25	1	5,150	1,935	1,380
Totals	1195	44	318,350	72,404	£95,037

The sundry revenue included in the above total declared profits is as under:—Simmer and Jack, £2,500; Robinson Deep, £729; Knights Deep, £243; Simmer Deep, £742; Jupiter, £811; Sub Nigel, £381; total, £5,406.

Reserve Gold.—Simmer and Jack, 1,925 ozs.; Robinson Deep, 1,875 ozs.; Simmer Deep, 1,000 ozs.; Jupiter, 850 ozs.; Sub Nigel, 450 ozs.; total, 6,100 ozs.

Knights Deep.—Results do not include 516 ozs. of gold from dismantled plates, the proceeds of which, viz., £2,162, will be earmarked for additions to plant. The removal of mill plates and the change over to the new system of tube mill plate amalgamation resulted in the absorption in the reduction plant of a large amount of gold. Lower tonnage crushed is on account of shortage of native labour.

Jupiter.—The profit earned in August is due to the fact that practically no fresh rock has been broken or development done, the mill having been supplied from rock previously broken which only had to bear cost of tramming and hoisting.

East Rand Proprietary Mines.

The following are the results of last month's operations: 820 stamps milled 151,500 tons; 54,471 ozs. of fine gold recovered valued at £231,704, including 908 ozs., valued at £3,818, recovered from accumulated slimes. Profit for the month, £82,513, including £2,025 profit from treatment of accumulated slimes. The following are the monthly profits for this year: January, £95,698; February, £89,514; March, £95,010; April, £95,204; May, £95,014; June, £92,007; July, £47,126; August, £82,513.

Barnato Group.

The following are the operations of the Barnato Group for the month of August:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.	Gross Profit including sundry Revenue.
Cons. Langlaagte ...	100	44,100	£58,003	£20,467
Ginsberg	80	14,895	21,034	6,520
Glencairn	160	20,745	15,629	3,068
New Primrose	160	25,200	34,869	19,061
New Rietfontein ...	120	16,700	16,170	1,226
New Unified	60	12,550	15,580	5,153
Quest	35	4,128	2,996	238
Van Ryn Deep	60	44,800	57,513	11,775
Witwatersrand	220	36,700	44,780	22,037
August totals ...	995	219,818	£226,574	£89,545
July totals ...	935	160,356	£194,570	£59,316

The monthly gross profits for 1913 are:—January, £79,198; February, £74,114; March, £81,152; April, £82,350; May, £81,949; June, £84,369; July, £59,316; August, £89,545.

Note.—The Van Ryn Deep result represents the tonnage treated from 14th July to 31st August, and it is estimated that over £15,000 worth of gold has been absorbed and is in circulation in the new plant.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of August, 1913:—Tons crushed, 3,852, yielding 1,954 fine ozs.; estimated value of month's output, £8,487; estimated profit for the month, £4,507.

Robinson Group.

The following are the results for the month of August of the above group:—

Langlaagte Estate ...	50,217	11,682	£10,016
Randfontein Central ...	211,756	63,707	£84,043

The estimated profit per ton milled is: Langlaagte Estate, 4s. 0¼30d.; Randfontein Central, 7s. 11·25d.

Goerz Group.

The results of the crushing mines comprising the Goerz Group for the month of August, 1913:—

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated ...	100	—	15,830	£12,569	£3,396
Princess Estate	60	5	22,500	28,328	1,547
Geduld Proprietary ...	60	5	14,760	22,838	3,025
	220	10	53,090	£63,730	£7,968

Transvaal 1912 Coal Output.

According to the Chamber of Mines annual report, the amount of coal produced by the principal coal companies, with value at pit's mouth, in 1912 was as follows:—

Name of Company.	Tonnage.	Value.
Springs-Brakpan Area:		
Apex Mines	203,199	£61,382
Clydesdale	118,482	31,185
Transvaal Coal Trust (De Rietfontein)	141,840	35,289
Welgedacht Exploration	66,555	17,416
Middelburg Area:		
Anglo-French Navigation	262,666	42,396
Cassel Coal Company	247,347	58,208
Coronation Collieries	269,259	62,197
Douglas Colliery	156,773	31,963
Middelburg Steam, Coal and Coke ...	286,975	63,842
Transvaal and Delagoa Bay Collieries	511,231	109,402
Transvaal Coal Trust (Oogies)	324,602	82,024
Witbank	848,735	177,279
Other districts:		
Breyten Collieries	433,628	76,983
East Rand Gold, Coal and Estate ...	90,694	15,153
South Rand Exploration	103,590	19,677

Zaaiplaats Tin.

The results for the month of August are as follows:—Days run, 24·2; ore milled, 2,338 short tons; residues retreated, 193 short tons; concentrates won, 112 long tons; average value of concentrates, 70·7 per cent. metallic tin; estimated profit for the month, excluding Government tax on profits, £9,357 11s. 6d.; add adjustments in respect of estimated values of previous shipments, nil; profit declared for the month, £9,357 11s. 6d.; capital expenditure, nil. The manager informs the board that there is an ample supply of water at present and that in his opinion there will be no shortage during the present dry season.

Precious Stones as Capital Investment.

Herr Georg Nicolaus contributes an able study on the value of precious stones as capital investment to the *Koloniale Zeitschrift.* After pointing out that from time immemorial precious stones have been stored up by wealthy potentates, not only on account of their beauty but because they were an easily realisable investment capable of being rapidly transported in case of need, the author asks the question whether value from the investor's point of view has decreased in these days of synthetic discoveries. In other words, is it not a risk to hoard them when, at any moment, their intrinsic value may fall considerably below the market value? In reply to the self-imposed question, Herr Georg Nicolaus asserts that, as regards rubies, supphires, emeralds and other coloured stones, their value as an investment has disappeared. The synthetic stones are so perfect that even science is unable to distinguish between them, and the fact that jewellers and State pawnshops (as they exist on the Continent) refuse to deal in them is an important consideration from the investor's point of view. Regarding diamonds, on the other hand, the question can be answered in the affirmative—that is to say, diamonds will retain their value as an investment. Science has produced perfect synthetic diamonds, but at an enormous cost and with disappointing results, the crystals being microscopically small. The hypothesis that within a measurable space of time better and more profitable results will be obtained is untenable. Remains, therefore, to be considered the possibility of the discovery of fields in German South-West Africa, for instance, where diamonds are as numerous as pebbles at Home, in which case the value of the gems might drop to a fraction of its present value. But even were it so, it must be remembered that the uncut diamond does not represent the market value of the cut diamond, to which has been added the cost of cutting, and this will remain an economic factor determining the real value of the perfect gem. In the circumstances it is difficult seriously to consider a possible slump in the market value of diamonds, which to-day, in a greater measure than heretofore, is the king of precious stones.

A New Precipitation Method.

A new idea in the precipitation of gold and silver from cyanide solutions has been devised by Charles W. Merrill, of Berkeley, Calif., for which he has been granted U.S. Patents Nos. 1,063,568-69-70. The idea has occurred to Mr. Merrill that both zinc shavings and zinc dust are accompanied by disadvantages and expenses inseparable from their manufacture and transportation which it would be desirable to overcome. The ideal striven for is to manufacture and use the precipitant in the quantity required and at the same time. This result has not been heretofore accomplished, but the system proposed by Mr. Merrill seems feasible. The process covered in the patents above mentioned makes use of a small tube mill through which the pregnant solution is drawn without previously having received any precipitant, but which is made and furnished inside the mill itself. The precipitant is to be furnished by using pebbles, or balls, inside the tube mill, made of zinc or an alloy of zinc and some other metal which will precipitate the precious metals from cyanide solutions. The lining of the tube mill may be made of the same zinc or alloy or may be of an abrasive material, such as carborundum. Metallic zinc, in a pure state, or when alloyed with small quantities of lead, is so malleable that it will not readily grind in such a device as this tube mill, and for this reason the pebbles, or balls, which furnish the precipitant, are to be made of zinc alloyed with some material or metal which will make the combination extremely brittle and easy to grind. In practice such an alloy may be composed of zinc, lead, magnesium, aluminium or some similar combination of metals. In order to make this material more easily ground, abrasives, such as carborundum, quartz or other form of silica, may be mixed in with the metal alloy at the time it is being made. The solution, after passing through this grinding apparatus and receiving its charge of precipitant, is pumped to a filter press which removes both the precipitant and the precipitate, and, if necessary, precipitation is continued by the more or less pregnant solution passing through the unused precipitant retained in the press. The whole arrangement is simple and it is probable that the method may hold some advantages.

The *Klerksdorp Record,* in an article discussing the home life of men employed on the country's gold mines, refers to some of the reasons why such employees find it difficult to make a home for their wives and families, and goes on to remark: "Were it possible it would be much pleasanter for him (the miner) to make a home in the vicinity of the mine, and sit under his own vine and fig tree during his leisure hours, but this is denied him. It is obvious also that a man who has a comfortable home and occupation which suits him would be less likely to become the prey of frothy agitators and irresponsible orators, and much of the Labour unrest which exists to-day would disappear and the relations between employer and employed be greatly improved. We cannot agree that conditions on the Rand gold mines differ so greatly from those existing in other industries in the Union and from the conditions existing in other mining countries, that a more settled state of things is impossible, and we hope that this point will be fully inquired into by the Commission which will shortly sit to investigate the conditions of the workers on our mines.

THE WEEK IN THE SHAREMARKET.

Firm, with Improving Tendency—Buying from Paris.

THE market exhibits a daily improving tendency, and business is gradually expanding. The tone is firm, and it is generally thought that we are on the eve of better things. If nothing untoward happens, the immediate future should see a return to at least more normal market conditions, as the recent inactivity was certainly abnormal. The few fluctuations in prices during the week are shown below:—

	Friday, 5th.	Sat., 6th.	Mon., 8th.	Tues., 9th.	Wed., 10th.	Thurs., 11th.
Adair Ushers ..	0 3B	—	0 3B	0 3B	0 3B	0 3B
African Farms ..	14 6B	—	14 9	14 9B	15 0	15 6B
Apex Mines ..	17 6	—	16 0B	17 3B	17 6	17 0B
Bantjes Consolidated	—	—	—	14 0B	13 9B	13 6B
Benoni Consolidated	2 0B	—	2 0B	2 0B	2 0B	2 0B
Brakpan Mines ..	—	—	—	60 0s	55 6B	—
Breyten Collieries	25 0B	—	25 0B	25 0B	25 0B	25 0B
British S.A.. ..	20 6B	—	—	20 0B	—	—
Bushveld Tins ..	—	—	—	0 6B	0 6B	—
City & Subs. (£4) ..	43 0B	—	43 0B	43 0B	43 0B	43 6
City Deeps.. ..	52 9B	—	53 0B	53 6B	54 0	54 0B
Cloverfield Mines ..	4 1B	—	4 2	4 1B	4 1B	4 2B
Clydesdale Colls. ..	9 6s	—	8 6B	8 0B	9 6s	9 6s
Cons. Investment ..	18 6B	—	—	—	—	18 6B
Cons. Langlaates ..	24 0B	—	24 0B	—	24 3B	24 6B
Cons. Main Reefs ..	15 6*	—	15 9B	16 0B	16 0B	16 3B
Cons. Mine Select.	—	—	—	—	9 0s	8 0B
Coronation Colls. ..	—	—	—	—	11 0B	11 6B
Coronation Freeholds	0 5B	—	0 5B	0 5B	0 5B	—
Crown Diamonds ..	10 0B	—	10 6	10 0B	10 3B	10 3
Crown Mines ..	—	—	131 3	—	131 3B	—
East Rand Centrals	7 6B	—	7 6B	7 6B	7 7	7 7B
East Rand Coals (2/6)	1 9B	—	1 10B	1 9B	1 9B	1 9B
East Rand Deeps ..	1 9s	—	1 5B	—	1 6s	1 6
East Rand M. Est.	1 1B	—	1 0B	1 0B	—	—
East Rand Props.	43 6B	—	43 0B	43 0B	43 0B	44 0B
Eastern Golds (1/-)	—	—	—	—	1 0B	1 2B
Frank Smith Diam.	8 0B	—	8 0B	8 6	8 6	9 3
Geduld Props. ..	20 0B	—	20 6B	20 3	20 0B	20 9B
General Minings ..	—	—	—	—	—	15 0s
Glencoe (Natal) Colls.	7 3B	—	7 3B	7 6	7 0B	7 0B
Glynn's Lydenburgs	—	—	—	—	13 6B	—
Government Areas	20 6	—	20 6	21 0†	20 9	21 6
Jumpers	4 6s	-	—	—	—	—
Jupiters	—	-	—	—	5 0s	4 6B
Kaalfontein D. (2/6)	—	—	0 3B	—	0 3	—
Klerksdorp Props.	—	—	2 0	2 0B	2 0B	2 1B
Knight Centrals ..	6 6	—	6 6	6 9	6 10	7 1
Lace Props. ..	2 6B	—	3 0	2 7B	2 9	2 7B
Luipaardsvlei Est.	5 3B	-	6 0	7 0B	7 0B	—
Lydenburg Gold Fms.	2 6B	—	2 9B	2 9B	2 9	2 9B
Main Reef Wests ..	8 6B	—	8 9B	8 9B	8 9B	9 0B
Main Reef West Debs.	£65B	—	—	£65B	—	—
Meyer & Charltons	—		—	—	102 6s	—
Middlevlei Estates	1 0B	-	1 0B	1 0B	—	1 0B
Modder B's.. ..	76 9B	—	76 9B	76 0B	75 6B	75 6B
Modder Deeps ..	29 0B	-	29 9B	29 3	29 3	29 0
New Era Cons. (5/-)	6 3B	-	6 0B	6 0B	6 0B	6 0B
New Geduld Deeps	1 9B	—	1 9B	1 9B	1 9B	1 9B
New Kleinfonteins	—	—	—	18 3B	18 0B	—
New Modders ..	—	—	—	—	—	220 0B
New Rietfonteins ..	—	—	3 0B	—	—	—
New Unifieds ..	14 0s	—	14 3s	14 3s	14 0s	14 0s
Nigels	16 0B	—	15 0B	—	15 0B	15 0B
O.F.S. & Trans. Dia.	1 6B	—	1 6B	1 6B	1 8B	2 0
Pickstone Golds ..	—	—	—	40 0s	—	—
Pretoria Cement Co.	45 0B	—	45 0B	47 6s	48 0s	44 0B
Princess	4 0B	—	4 0B	4 3B	4 3B	4 6B
Rand Klips ..	1 5B		1 3B	1 3B	1 3B	1 0B
Rand Nucleus ..	2 0	—	1 10B	1 9B	1 9	1 9B
Randfontein Props.	3 0B	—	—	—	1 9B	2 9B
Randfontein Estates	26 6	—	26 9	26 6B	26 6B	27 0
Roberts Victors ..	—	—	28 9B	29 0B	29 0B	30 6B
Robinson Deeps ..	32 6s	—	31 0B	31 6B	31 6B	31 6B
Rooiberg Minerals.	28 0B	—	28 3B	28 0B	28 0B	28 0B
Rose Deeps ..	—	-	—	50 0B	—	—
Shebas	5 0B	—	5 0B	5 0B	5 0B	5 0B
Simmer Deeps ..	2 0B	—	2 0B	2 0B	2 0B	2 0B
S.A. Breweries ..	40 6B	—	40 6B	40 6B	40 9B	41 0B
S.A. Lands ..	3 1B	—	3 0B	3 1B	3 1B	3 2
Springs Mines ..	—	—	15 0B	15 6B	15 6	15 6B
Sub-Nigels	9 3B	—	9 0B	—	—	9 0B
Swaziland Tins ..	48 6B	—	49 6B	48 6B	48 6B	49 0B
Trans. Coal Trusts	35 0B	—	—	36 0s	36 0s	36 0s
Trans. Cons. Lands.	—	—	—	22 0B	—	—
Trans. G M Estates	52 0	—	51 6B	51 6B	51 6B	52 0B
Van Ryn Deeps ..	30 3	—	31 6	32 0	31 6B	32 3B
Village Deeps ..	39 0s	—	39 0B	38 0B	38 0B	39 0s
Vogel Cons Deeps	--	—	—	—	—	0 6B
Witbank Collieries	38 0B	—	38 0B	37 0B	37 0B	38 6B
Witwatersrands ..	64 0B	--	66 0B	68 0B	68 0B	69 0B
Wit Deeps ..	53 6B	—	54 3B	54 6B	54 3B	54 6B
Wolhuters	13 9B	—	14 0B	14 6B	14 6B	14 6B
Zaaiplaats Tins ..	37 9	—	36 9	36 3	36 3	37 3B

B Buyers s Sellers. *50 shares. †30 shares.

The usual monthly meeting of the S.A. Institution of Engineers will be held this (Saturday) evening at the Chamber of Mines. Paper by Dr. Glucksman on the "Protection of Overhead Electric Transmission Lines" will be read; and the final discussion on Mr. Warriner's paper will take place. Those interested are invited to attend.

Anglo-French Matabeleland.

The report of the Anglo-French Matabeleland Company, Ltd., for the year ended 31st May, 1913, shows a credit balance of £2.827 for the period under review. The available cash, or its equivalent, less sandry creditors, amounted to approximately £24,257 at the close of the financial year, as compared with about £17.700 at 31st May, 1912. The mining policy of the board is to prove the value of its 200 claims on the Belingwe Goldfields with as little expense as possible to the shareholders. With this object in view the tributing agreements provide for a moderate royalty and for certain development work being carried out to the directors' satisfaction. As regards the claims not yet let on tribute, certain prospecting or assessment work is being carried out involving only a small expenditure. During the year the board sanctioned a scheme of cattle ranching on a small scale on the Belingwe block of farms. Owing to the scarcity of grain amongst the natives in the district, it was possible to barter grain for good native cows and heifers. Other breeding stock was purchased from traders, who had also obtained their cattle by bartering grain. Thoroughbred Afrikander, three quarter-bred Shorthorn and half-bred North Devon-Afrikander bulls were purchased from local farmers. An independent valuation of the cattle was made in August this year, and shows a value considerably in excess of the amount of £6.051 shown in the balance sheet.

In the issue of August 23rd the *Mining Journal* contains an interesting article by Mr. R. M. Gwyn-Williams on "Mining in the Katanga," in the course of which the cassiterite deposits of the country are discussed. From this we gather that cassiterite has been found within the area enclosed by the Congo and the Luvua rivers, in many instances the mineral being almost white, and found in small quantities in the many small rivers embraced within this area. The first discovery considered of commercial importance was made by Mr. Mathieu, engineer and geologist, in the Kiambi district, and the surface richness warranted the company owning this block in granting further capital for prospecting. The cassiterite here has the appearance of that elsewhere, being blackish in colour, but extremely coarse in crystallisation, the crystals being often two, or even three, centimetres in length with double terminals. The tinstone is of great purity, and realises a very high price in Europe. The country is a mica-schist, generally trending in a north-east and south-west direction. On the west side of the river a swing occurs in the schist, and the stanniferous rock follows the same direction. Intruding into these schists are to be found a series of well-formed quartz lodes, occasionally carrying iron, but generally sterile. In several places large bodies of laterite are to be found overlaying the schists. The schists most probably rest upon a granitic base. Quartzite is generally evidenced, sometimes adjoining the tin bodies and at other time some little distance away, but always running in the same direction. Again to the east evidence remains of the red sandstone of the "Kundelungu system," as well as limestone "blue." The stanniferous bodies have been proved to be adjoining the sandstone, sometimes the quartzites, and the neighbouring schists along certain lines are tin bearing.

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Engineering Notes and News.

S.A.I.E. President's Inaugural Address.

At the last meeting of the South African Institution of Engineers the President (Mr. W. Calder) said, *inter alia*:—In all probability there are only two operations in which comparative finality has been reached in the treatment of our gold-bearing ores; these are, the rending power of blasting gelatine, and the value of our slimes residues. Between these two results lie the multitude of contentious questions which exercise the minds of the thinking workers connected with the mining industry. The question of cheaper working costs is more acute to-day than it has ever been. With never ceasing regularity, there appear factors which tend to reduce the amounts returnable as profits, and as time goes on the factors become more significant. With due consideration for more healthful conditions below and above ground, our constant endeavour must be for increased efficiency and greater economy, until such a time when the last ounce of gold can be profitably extracted. The problems involved in obtaining the results mentioned will continue to afford a means of livelihood for the best technical men turned out from our colleges both here and oversea. Of late considerable strides have been made in the direction of economy by means of centralisation of works. From central electrical power and air stations we are now being supplied with electrical power and air, at a lower cost than it can be generated at detached power plants, and with an ever-increasing degree of reliability. The centralisation of mining work, by means of the amalgamation of neighbouring mines, presents many difficulties, and it is to be hoped that the interesting paper on "Centralised Organisation at the Crown Mines" read before us by Mr. R. C. Warriner, will be productive of the exhaustive discussion the subject invites. This centralisation of work, advantageous in its own particular lines, in no way impairs our individuality, nor restricts the enormous field for the perfection of details that lies before us. The points where we can do better crop up daily, and it is this continuous individual effort for the improvement of details in our various spheres of work that will show the best collective results. With regard to healthier conditions underground, there is only one way to obtain them, and it is by a complete system of ventilation. The prevalence of miners' phthisis has driven home the fact that natural ventilation, on which we have depended in the past, is totally inadequate. A ventilating fan and such dust-allaying devices as are capable of maintaining a pure atmosphere are now recognised as indispensable in the equipment of every mine. Several large fans with an air capacity up to 300,000 cubic feet per minute at 2¾ in. W.G., are in successful operation, and the beneficial results encourage our mining engineers in their efforts to make the mines of these fields as thoroughly and systematically ventilated as any dangerous gaseous mine. At this stage I may perhaps be allowed to advocate the scheme suggested by Mr. H. C. Behr. It is that of placing electrically driven air compressors at the bottom of our downcast shafts. Indeed, we might go further, and advocate ventilating districts in the mine, each with its own compressor drawing its air from the main air intakes. The flexibility of electrical transmission has simplified many ventilating problems, and every arrangement which draws air into the mine and assists the exhaust fan at the upcast shaft must be advantageous to a degree. As a result of our methods of mining, we leave behind large worked-out open spaces that prove a danger to the stability of our mines, that are deterrent to efficient ventilation, and are a constant menace to the health of our miners. Kaffirs and other irresponsible persons have every access to the said open places, and it is impossible for this reason to keep our mines in a thoroughly sanitary condition. These conditions are now happily being overcome by the continual improvements that are being made in the methods of sand filling. On certain mines the question of returning all current sand residues to the mine is being tackled in a resolute manner, and it is quite within the bounds of possibility that this work can be done at very little increased cost over the present method of stacking sands on the tailings dump. Apart from the first and most important mining service that sand filling performs in supporting and steadying the country, it is of inestimable value from the points of view I mention, viz., ventilation, health and sanitation, particularly the latter, and consequently the former. I am again tempted to make a plea for some system of underground sorting. My reason for this is that the waste rock makes good filling, and its general employment for packing and walling purposes would put a very welcome restriction on the enormous amount of timber used for mining purposes, which the South African forests can ill afford to spare. Another important feature is that the hauling shafts would be relieved of from 10 per cent. to 20 per cent. of its work. This in itself is important, because recent happenings clearly show us that we shall have to take advantage of every circumstance that will enable us to devote as long periods as possible to the transport of persons in our hauling shafts. Early in 1904 a most valuable paper was read before us, entitled "Trials of Rock Drills for Air Consumption." This paper was productive of a most interesting discussion, and was of inestimable value to makers and users of rock drill machines. The question of air consumption of rock drills has been revived, and I am glad to be able to announce that it is the intention of two of the members of the Council to favour us with an instructive and illuminating paper on this most important subject. I can assure the intending authors that their paper will be awaited with lively interest. By comparing the work of to-day with that of 1904, members will be able to note the advance that has been made in this branch of mining work. The question as to which is the best rock drill for various duties is still a moot point, though I incline to the belief that the issue is rapidly narrowing. Fresh facts are being brought to light every day, and these tend to show that the cost of maintenance, comparing one make and type of our best machine with another, does not vary in any remarkable degree when the drills are kept at a certain standard of repair. The final decision must be made on air consumption over the footage drilled, an important decision which can be safely left to the modern compressed air meter. The supply of compressed air from central power stations has necessitated the invention of reliable compressed air meters. Several types have been perfected and installed in the compressed air mains on numbers of our mines. In every case the air meter has justified its purchase, because it clearly shows the quantity of air sent in to the mine, and accurately tells at what period of the shift the expensive commodity has been ruthlessly wasted. In connection with rock drills, many of us are endeavouring to devise a detachable bit suitable for drill steel. Numbers of bits have been tried without any of them having proved entirely successful. By perseverance and by taking advantage of the experience gained by others, the different devices will continue to be improved upon, until a bit will at length be evolved which will stand up to all conditions of work. The importance of such an achievement must be apparent to every one. The miner will have a supply of steel ever ready at his hand, and replacements will be made without loss of time. Through it, the time taken up in handling drill steel in hauling shafts will be saved, and, as I have said before, every practicable scheme that relieves shaft work is to be welcomed. The success attending the use of the internal combustion engine for all classes of work compels us to think that the day of the tramming boy must be over. The possibility of the petrol locomotive for underground tramming work are at length becoming thoroughly appreciated. Numbers of these engines are now at work on main haulage levels, and they bid fair to outrival any other known means of underground traction. A ready market awaits the engineer who will replace the tramming boy by an internal combustion engine, designed to run on our tortuous development levels, without involving any radical departure from our present methods of mining. The meagre rainfall of recent years has compelled us to pay special attention to the conservation and use of water. Much could be done to help us in this direction, were suitable purifying and filtration plants erected for the treatment of mine water. Most mine water carries free acid to a varying extent, and it is becoming the universal practice now to neutralise this acid in the mine sump before pumping. In every instance where this has been done, the cost of the neutralising agent, whether lime or carbonate of soda, has been repaid with interest by the reduction in cost of pump replacements and pipe columns. The water on being pumped to the surface, only needs freeing from the floculent impurities which it contains to render it a practically pure water for the purpose of ore reduction. Every reduction officer will appreciate what this supply of slightly alkaline clean water means to him, and I am certain that he will be prepared to guarantee that the cost of filtration will be more than repaid by the reduction in the sands and slimes residue values. Among many other points awaiting discussion I would like particularly to refer to the electrification of our mining plants. It is rather early to go beyond mentioning the passing of the reciprocating steam engine on these fields as a prime mover, but I hope before my term of office expires a comprehensive paper will be read detailing the history of the alteration from steam to electricity, the difficulties met with and overcome, the advantages gained, and the savings effected.

The Problem of the Steel Rail.

This subject is discussed by Mr. A. J. Beaton, assistant engineer-in-chief of the South African Railways, in a pamphlet bearing the above title. He remarks that notwithstanding the care bestowed on designing, the scientific relations between the section, weight, and composition, and the knowledge and skill expended on the manufacturing of rails, the requisite accurate and specific knowledge in connection with this problem has not yet been attained, so as to conclusively determine on the most economical section of rail and its best chemical composition. This, Mr. Beaton holds, can only be arrived at by carefully kept statistics and co-ordinated tests based on the variation of traffic and on the condition and upkeep of the track. Such tests should be sufficiently comprehensive, and the method of determining the relation between the resistance to wear and the other properties of the rail should be compiled on a foundation of theory combined with practice, in order to secure the greatest value in ultimate results; for even engineers are sometimes prone to deduce conclusions from inadequate data. Mr. A. M. Tippett, the engineer-in-chief of the South African Railways and Harbours, has taken an advanced step by introducing rails of different chemical compositions for use on curves of sharp radius and heavy wear, with the object of determining the relative values of the resistance against wear of the following different qualities of steel, namely:—Sandberg open-hearth-high silicon; Sandberg basic open-hearth high-silicon; Sandberg Bessemer acid, high-carbon; open-hearth basic, high-carbon; Talbot open-hearth basic, high-carbon; Bessemer acid, B.S.S. specification; Bessemer basic B.S.S. specification. These rails are to be carefully weighed each year, while the actual tonnage passing over them will be systematically recorded. Mr. Beaton believes that the data thus obtained will prove of great value, and will form an important factor in determining the best type of rail and will also greatly help in deciding the permissible curvature of the future, consistent with the most economic alignment of the track.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler Edwards Company	8.15
Standard:	See bills
Empire	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 & 9

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GLASGOW OFFICE: 11, WEST REGENT STREET.

Finance, Commerce, and Industries.

British Trade with S.A.

Statement supplied by the British Trade Commissioner's Office, Capetown, covering the external trade of the United Kingdom (with special reference to British South Africa), for the six months ended June 30th, 1913:—The "Accounts relating to the trade and navigation of the United Kingdom," for the six months ended June 30th, 1913, show that the values of the merchandise imported into and exported from the United Kingdom during the half-year were as follows:—Imports, £379,000,000; exports (United Kingdom produce and manufactures), £257,000,000; re-exports (foreign and Colonial merchandise), £59,000,000. Compared with the figures for the first half of 1912 (the highest previously recorded for any half-year) the above totals show that imports increased by nearly £25,000,000, or 7 per cent.; exports increased by £31,750,000, or 14 per cent.; re-exports increased by £1,250,000, or 2 per cent. The increase of £25,000,000 in the value of imports includes: Food, drink, and tobacco, about £7,500,000 increase; raw materials and articles mainly unmanufactured, about £8,750,000 increase; articles wholly or mainly manufactured, about £8,500,000 increase. The chief increases under the head of exports of United Kingdom produce and manufactures are the following:—Coal, £8,100,000 increase; iron and steel, and manufactures, £6,400,000 increase; machinery, £2,700,000 ~~increase~~; ships (new), £1,600,000 increase; cotton piece goods, £5,500,000 increase; chemicals, drugs, dyes and colours, £1,100,000 increase. A large part of the increase in the export of coal is, of course, due to the great coal strike that took place between the end of February to the end of the first week of April of 1912. Even, however, as compared with 1911, the exports of coal show an increase of more than £6,500,000. The foregoing statement relates only to merchandise. The total values of gold and silver bullion exported during the six months were £25,600,000, as against £33,400,000 imported. The value of imports from and of exports to British South Africa during the first half of this and last year (exclusive of gold and diamonds) were:—Imports, 1912, £6,055,000; 1913, £6,910,000. Exports (U.K. produce and manufactures), 1912, £10,719,000; 1913, £11,196,000. Re-exports (foreign and Colonial merchandise), 1912, £952,000; 1913, £969,000. There was thus a substantial increase in both imports and exports over the corresponding period of 1912. Among the principal articles were the following:—Imports from British South Africa: Wool (sheep's or lambs'), £3,467,000; mohair (Angora goats' hair), £337,000; skins (goats' or sheep's), £663,000. Exports to British South Africa of United Kingdom produce and manufactures: Iron and steel, and manufactures thereof (so far as separately distinguished in the monthly accounts), £1,425,000; machinery (so far as separately distinguished), £653,000; cotton piece goods, £579,000; apparel, £1,594,000; boots and shoes (of leather), £557,000. The value of gold bullion imported from British South Africa during the first half of 1913 was £20,075,000, as against £19,637,000 during the same period of 1912.

* * * *

Commerce and Labour.

The annual report of the General Executive Committee of the Association of Chambers of Commerce to be presented at the forthcoming Congress, states that the improvement in trade conditions throughout South Africa, which has been noticeable during the past few years, has continued, but while business has generally been on a stable basis there are indications, apart from abnormal circumstances created by the recent labour unrest, that possibly the high-water mark has been reached. The upheaval and agitation of labour has been a source of much concern to the commercial community. The destruction of property, the cessation of employment and of the payment of wages, the consequent diminution in the circulation of money, and the uncertainty and unrest attendant on industrial strikes, have all contributed to retard business in every direction; while the credit of the Union has been prejudiced. Not only do such occurrences adversely affect the mines and commerce directly, but the natural effects are reflected in some form or other throughout the whole of the trade of South Africa. Apart from these unusual occurrences, there would not appear to be anything of a serious character to indicate a set-back in trade, yet the recommendations of most leaders of commerce to exercise caution have not been entirely without justification. The drought which visited the inland districts last year showed signs of becoming serious, but the untoward indications were in a large degree favourably counteracted by the late rains, and from an agricultural point of view a good average season was the result. Prices of agricultural produce ruled high, and the farming community generally have been prosperous. Generally the trade returns indicate expansion of business. Imports and exports have increased; the returns of the railways, harbours, customs, and posts and telegraphs all show increased trade, as do the transactions of the banks.

* * * *

New Railway Rates.

The question of the new railway rates on coal to Cape ports has exercised the minds of Natal coal-owners for some considerable time. In fact, when the matter of the change was first mooted it was taken up with Mr. Hoy himself, but apparently without any relief being given to the Natal collieries. Examples of the new rates to come into force on October 1st are:—

Colliery.	Capetown. s.	d.	Capetown for shipment. s.	d.	Present rate for shipment. s.	d.
Coalbrook, O.F.S. (950) ...	14	0	13	0	14	0
Breyten (959)	14	10	13	10	16	4
Witbank (1,108)	14	0	13	0	15	5
Hatting Spruit (1,113) ...	14	10	13	10	16	3
Hlobane (1,181)	15	9	14	9	17	3

(Figures in parentheses represent miles from Capetown.)

So unfavourable was the view taken as to their effect that the Natal Collieries at a recent meeting placed their views on record. They represented to the Administration that the new ratio overland from Natal would be useless, owing to the increased rail distances involved, and especially so owing to the increased cost of working mines in this Province. The new rates are, therefore, tantamount to a preference being established in favour of Transvaal coal. Another view was that the new rates were unprofitable when compared with the rates earned over the line to Durban, and that the diversion of coal to the longer route would intensify still further the serious loss to the Natal collieries due to the continued shortage of rolling stock. Exception was also taken to the principle of allowing a rebate of 1s. per 2,000 lb. on coal for bunkers at Capetown, as being inconsistent with the practice at Durban, where the rebate was allowed only on cargo coal.

INVESTORS' DIARY.

The following company meetings have been announced:—

Sept. 19.—Transvaal Gold Mining Estates (special).
Sept. 19.—Transvaal Gold Mining Estates.
Sept. 26.—Simmer and Jack Prop.
Sept. 26.—Sub-Nigel.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Oct. 27.—Johannesburg Consolidated Investment Company.
Nov. 11.—Jumpers G.M. Company.

Automobile Notes.

The report of the British Select Committee on Motor Traffic, which was issued in mail week, is a document of much interest and importance. The Committee was appointed at the end of last November in consequence of the large and increasing number of fatal accidents in London due to motor 'buses and other mechanically driven vehicles, and its specific object was to make recommendations to secure the greater safety of the public in the streets. It has performed its duty thoroughly and relatively with dispatch, and if the measures it proposes, or something like them, be adopted, there may be a considerable diminution in the numerous fatalities on the highways of the metropolis. The Committee finds, for one thing, what other bodies of investigators have discovered before, that the chief need is the simplification of the control of traffic and more direct action in every branch of administration affecting this particular function. At present there are too many authorities mixed up in the supervision of transportation, with the result that they frequently hamper and often thwart one another and render the just apportionment of blame, when blame has to be awarded, a puzzling, if not an impossible, task. To solve this problem the Committee recommends the creation of a new Traffic Branch of the Board of Trade, which shall take over and combine the various traffic duties now discharged by the Home Office, the Local Government Board, and the Board of Trade. The duties so taken over are to include the confirming of by-laws, and, of course, to the old will be added whatever new duties it may be found expedient to place from time to time on the department. Apart from the formation of the Traffic Branch, the Committee makes numerous drastic proposals for simplifying the control over street traffic in the metropolitan area. The most important of these is the following:—That all mechanical stage carriages and hackney carriages be brought under closer control; that the routes, time-tables and number of stage carriages be subject to County Council regulations confirmed by the new Traffic Branch of the Board of Trade, with a right to local authorities and other interested parties to be heard, such right to extend to any decision of a Council relating to these matters, or the refusal or neglect of any Council to take action when requested to do so; that the design of mechanical stage carriages be subject to the new Traffic Branch, which should have independent expert advice.

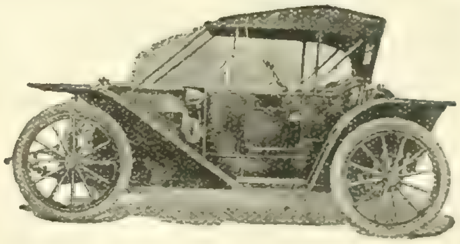
The Royal Automobile Club of South Africa, the Publicity Association, and the British Manufacturers' Agents' Association, having collected valuable information in connection the question of hotel accommodation in the towns and country districts of the Cape Province, a joint sub-committee is to be formed to tabulate the results, with a view to the classification of areas and the hotels contained therein. Further information is to be invited from other bodies invited from other bodies interested in the question.

* * * *

The Excise Department has invested in a Ford car for the official use of its inspectors at the Paarl. Should the experiment prove successful, more of these cars, it is stated, will be purchased for similar service in other districts. We are informed that the police authorities in the Transvaal have several Fords in use in connection with inspectors' duties in that Province, and that the company has been invited to submit tenders for a further supply for use in other parts of the Union.

* * * *

The condition of the roads in the north-western districts, especially in Namaqualand and Calvinia, is described as unspeakable at the present time. Quite a number of cars are



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reported to be awaiting delivery at railway stations in consequence, and the despatch of others from Capetown is being deferred till an improvement takes place.

* * * *

The money contributed by motorists to the Road Board in England was definitely promised for the improvement of roads, and motorists wanted to know how the money was being spent. The question was raised in the House of Commons recently, and it was elicited that the income of the Road Board was £3,457,021, and that of this amount the Board had invested £2,602,527. It is to be hoped that motorists will take this matter up and bring such pressure to bear as will ensure the money thus hoarded up being spent for the purposes for which it was collected.

* * * *

It has now been officially announced by the R.A.C. that there will be a race for the International Tourist Trophy held in the Isle of Man in June next year. The conditions have been made as simple as possible, and there seems every prospect of a successful event. The only restriction in regard to chassis is, that the minimum weight shall be 25 cwt., and the basis of measurement of power is to be the cubical content formula. The race will extend over two days, and will cover a distance of, approximately, six hundred miles. The proprietors of the *Daily Telegraph* have presented cash prizes amounting to £1,650 for the encouragement of the race.

* * * *

A set of returns recently issued by the Commissioner of the City Police, London, reveal the fact that street accidents are decreasing in a very marked manner. Those connected with horse-drawn traffic, and those with motor-propelled traffic are nearly equal. The reason for the decrease is to be found, we think, in the recognition by the people of the altered conditions of modern traffic, and the manner in which they are adapting themselves to it.

* * * *

An entirely novel method of applying electricity for engine starting purposes is exemplified in the U.M.I. Magician Electric Engine Starter. It consists of an electric motor driven by power drawn from the accumulators running the car-lighting set. To the shaft of the motor is coupled a friction wheel which, when brought into contact with the fly-wheel of the engine by means of a foot-operated cable, revolves it, and thus starts up the engine on its own power. The new self-starter is light and neat in appearance, and can be fitted to all existing motor cars without any structural alterations, and at low cost.

Advices from America indicate that there is every possibility that the States may not, after all, be represented in this year's race for the British International Trophy. Although it is stated that a dozen challengers have been built, they have all met with trouble of some sort, and so the Motor Boat Club of America is at present unable to make up a team which would have any chance of winning. In order to give the Americans a chance of competing, it is stated that the Royal Motor Yacht Club has, with the consent of the A.C. de France, arranged to postpone the races till the 10th September.

* * * *

At the meeting of the Griqualand West Farmers' Society held on the 12th July last, Mr. H. G. Anderson raised the question of the future of the horse in this country, having regard to the rapid increase, which is everywhere apparent, of motor traction. In Kimberley, he said, whereas hundreds of horses were formerly used, now hundreds of motor cars and cycles had taken their places.

* * * *

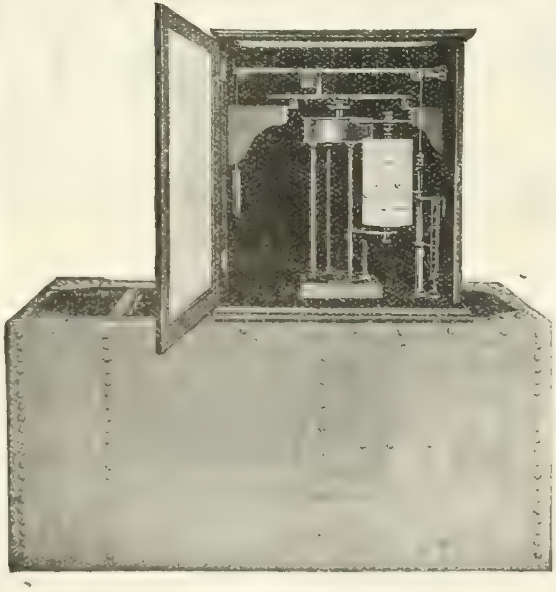
It was true that at the present time there were not a large number of horses in the country, but farmers were importing fresh stock and were spending money in trying to breed a better class of horse. As a matter of fact, horses were dearer to-day than in the pre-war days, but that was because there was then over-production. The war consumed the surplus, and more, but normal conditions were steadily approaching, and the future of the horse-breeder, who was now confronted with the competition of the motor car, had to be considered.

* * * *

In the discussion that followed it was considered that the view taken was a pessimistic one, and that there was room for both classes of traffic. In that district horse-breeding was being profitably pursued, and farmers found no difficulty in disposing of their stock for services for which motor cars were not suited. Before the war, good geldings could be bought for £6 or £7. To-day from £20 to £30 had to be paid for decent animals of the same class, and they were difficult to get at that.

* * * *

One of the reasons for the present scarcity of horses appears to have been overlooked in discussing this question. In a large number of districts in which horse-breeding was for many years extensively followed by the farmers, a more profitable branch of industry has spread. Wherever it was



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found that lucerne would grow, the farmer has turned his lands into ostrich camps, and the capital formerly invested in horses has been diverted to the production of feathers. Among farmer-motorists, we think we are correct in saying that the majority are ostrich farmers.

Confirming the announcements made in recent issues of this paper, an official statement has been issued by the Minister of Mines, in which he says, *inter alia:*—The demands of the Transvaal Miners' Association, with few exceptions, which the mining companies stated they could not agree to are being given effect to in the draft regulations which are now under consideration. These will be finally considered by the Government very shortly after the parties interested have been consulted, and effect will probably be given to them, if nothing untoward happens, in a few weeks. The Economic Commission to investigate all points with regard to wages which were raised by the Union in July last, will be gazetted next week, and will, it is hoped, be able to commence its sittings at the beginning of October. The following points are touched upon in most of the representations made by unions and are being dealt with by the Government: (1) A Factory Bill. This is already in draft, and has been this week submitted confidentially to all parties interested. (2) Workmen's Wages Lien Bill. This is in actual progress of being drafted. (3) Industrial Disputes Prevention. A Bill dealing with this subject is at this moment in course of preparation, and it is hoped that the Bill will provide a ready means for dealing efficiently and quickly with all classes of dispute or disagreement in industrial matters. (4) Recognition of Trades Unions. The Government is considering a Trades Union Bill, and investigations are being made on this subject. The negotiations regarding a proposed conference between representatives of the mining companies and the Transvaal Miners' Association are still proceeding. (5) Mine Benefit Societies Bill. This will be proceeded with in due course. There has not been time to do more than make preliminary inquiry. (6) Workmen's Compensation Bill. A uniform Bill for the whole Union is being drafted at the present moment, with certain amendments in which experience has shown that present legislation is lacking. (7) Miners' Phthisis Act Amendment. The question of the necessity for amendment of the Phthisis Act is under consideration. The legislation above referred to is being prepared departmentally by Mr. Warington Smyth, the Secretary for Mines, who is in residence in Johannesburg, and is prepared to discuss any of the matters arising out of proposed legislation with those who are interested. Communications from other parts of the Union on these subjects should be addressed to the Secretary for Mines, at the New Law Courts, Johannesburg. Arrangements will be made later on for Mr. Warington Smyth to visit other centres if possible. It will thus be seen that the Government is taking active steps to remove all existing causes of disagreement, and to provide for the permanent settlement of industrial matters so far as is possible.

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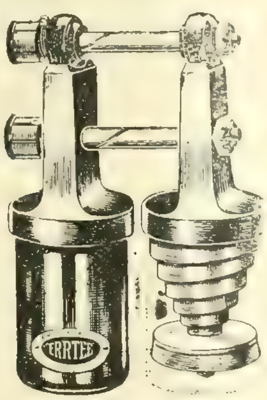

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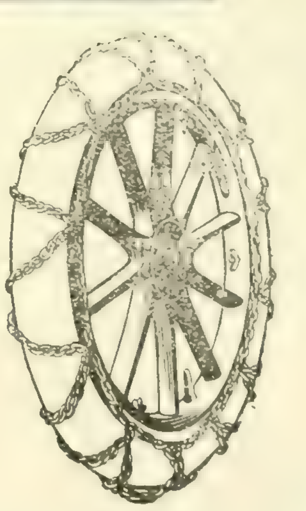

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New Patents.

392. (1) James Dunlop Wilson (2) Maurice Solvie Aaron (3) Leuis Levy.—Improvements in drills and detachable cutters therefor.
394. Aktieboleget Mfolkningsmaskin Omega.—Improvements in or relating to milking machines.
393. James Dunlop Wilson and Maurice Solvie Aaron.—Improvements in means for cleaning the screws of rock drilling machine bars.
395. Louis Wm. Campbell.—Improvements in electrical heating units and resistance coils and method of manufacturing the same.
396. Thomas Frederick Caldwell.—An improved quick-firing machine gun.
397. James Dowson Jackson.—Improved apparatus for separating solid matter from smoke, improvement in and connected with apparatus for clearing smoke.
398. Harry Pauling.—Improvements in the process of concentrating dilate nitric acid.
399. (1) Sterling Telephone Electric Co., Ltd. (2) Francis George Bell.—Improved contact breaker for electric bells and the like.
400. Ross Merritt Griswold Phillips.—Improvements in cookers.
401. Constantin de Sedneff.—Improvements in electrical accumulators.
402. Ernest Albert Jones.—Improvements in and relating to route indicators.
403. Alphouse Emile Verge.—Improved gelatine explosive.
404. Alphouse Emile Verge.—Manufacture of derivates of toluene.
405. James Esson.—An improved carburettor for internal combustion engines.
406. Isidor Kahn.—Invention for the cure of wire or tape worm in sheep.
407. Gaston Jacquier.—A new process of detinning.
408. Harold Austin Lewis.—Improvements in spray devices for rock-drilling machines.
409. Joseph Foulkes Williams.—An improved electrical fuse lighter.
410. Sigismund Danman Schlam.—Safety link for preventing overwinding of mining cages or skips.
411. (1) Thomas George Johns (2) Albert Richard Bannister.—Improved variable power transmission gear.
412. Hans von Kramer.—Improvements in means for the regulation or construction of railway and like traffic.

PROSPECTUSES.

4269. African Films Trust, Ltd., Johannesburg.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

160. Roodepoort United Main Reef G.M. Co., Ltd., Johannesburg; amendment of articles.
175. Meyer and Charlton Gold Mining Co., Ltd., Johannesburg; amendment of articles.
182. New Steyn Estate Gold Mines, Limited, Johannesburg; amendment of articles.
974. Rand Collieries, Ltd., Johannesburg; amendment of articles.
985. The Aurora West United Gold Mining Co., Ltd., Johannesburg; amendment of articles.
1204. Cinderella Consolidated Gold Mines, Limited, Johannesburg; amendment of articles.
1582. New Goch Gold Mines, Ltd., Johannesburg; amendment of articles.
1978. West Rand Consolidated Mines, Ltd., Johannesburg; amendment of articles.
3946. Afra, Ltd., Johannesburg; liquidation.
3919. Groot Spelonken Trading Co., Ltd., Zoutpansberg; liquidation.
3724. L. C. Smith and Bros., Typewriter, Ltd., Johannesburg; amendment of articles.
3072. New Thor Diamond Mining Co., Ltd., Johannesburg; reduction of capital.
2362. Pretoria Copper and Tin Fields, Ltd., Johannesburg; liquidation.
4071. South African Alkali, Ltd., Johannesburg; conversion into a public company.
3617. Standard Importing Co., Ltd., Johannesburg; liquidation.
1760. Kempton Park Estate, Ltd., Johannesburg; reduction of capital.
3889. Criterion Theatres (S.A.) Ltd., Johannesburg; amendment of articles.
2070. E. Friedlander and Co., Ltd., Johannesburg; reduction of capital.

COMPANIES PLACED IN LIQUIDATION.

4039. Georgian Gold Co., Ltd., Johannesburg; voluntary.
3946. Afra, Ltd., Johannesburg; voluntary.
3891. African Film Syndicate, Ltd., Johannesburg; by order of Court.
3919. Great Spelonken Trading Co., Ltd., Zoutpansberg; voluntary.
3243. H. Kroomer, Ltd., Johannesburg; voluntary.
3720. Atlas Theatre Co., Ltd., Benoni; voluntary.
3883. Randfontein News Agency, Ltd., Randfontein; by order of Court.
1111. Hex River Exploration Co., Ltd., Johannesburg; by order of Court.

NOTICES OF SITUATION OF THE REGISTERED OFFICES.

2516. African Share Agency, Ltd., Stand 299, Albert Buildings, Commissioner Street, Johannesburg.
2794. Empire Diamonds, Ltd., Stand 299, Albert Buildings, Commissioner Street, Johannesburg.
3642. Ebenezer Maxim and Son (Johannesburg), Ltd., Sauer's Buildings, corner Loveday and Market Streets, Johannesburg.
1397. Nourse-Rainier, Ltd., 86 and 87, Johannesburg Stock Exchange Buildings, Johannesburg.
3982. Newmarket Butchery, Ltd., Stand 252, 64a, Staib Street, Doornfontein, Johannesburg.
4229. Convent Garden, Ltd., 18 and 19, Natal Bank Buildings, Market Street, Johannesburg.
4162. Dekko Syndicate, Ltd., 28, Sauer's Buildings, Loveday Street, Johannesburg.
3860. Africa's Amalgamated Theatres, Ltd., Empire Theatre Buildings (1st Floor), corner Kruis and Commissioner Streets, Johannesburg.

Companies Registered.

The following is a list of companies registered during August :—

Mafeni Minerals, Limited, No. 94, Stock Exchange Buildings, Johannesburg; registered August 8; capital, £2,000.

The Jollie-Bright, Limited, Sabie, on Farm Waterval, No. 48 District Lydenburg; registered August 16; capital, £4,000.

H. Alan and Co., Limited, 71, Commissioner Street, Johannesburg; registered August 18; capital, £300

Elvena Gold Mines, Limited, 68-69, Permanent Buildings, Johannesburg; registered August 22; capital, £3,000.

Truda's Band and Messina Orchestra, Limited, No. 113, St. Andries Street, Pretoria; registered August 23; capital, £50.

Haenertsburg Syndicate, Limited, Nos. 11-17, Trust Buildings, Fox Street, Johannesburg; registered August 23; capital, £500.

Roodewal Tin Developing Co., Ltd., 7, Rand Club Buildings, Johannesburg; registered August 26; capital, £12,500.

The Riversdale Gold Mining Co., Ltd., 19, Knox Street, Germiston; registered August 26; capital, £2,000.

FOREIGN COMPANIES.

The Peach Tree (Transvaal) Syndicate, Ltd., care of William Tasker Hallimond, 36, Commercial Exchange Buildings, Main Street, Johannesburg; registered August 6; capital, £5,000.

Indimba Tin Alluvials, Limited, care of Harry John Filmer, 10, Corporation Buildings, Rissik Street, Johannesburg; registered August 6; capital, £60,000.

Greig Diamonds (Schweizer Reneke Townlands), Limited, care of Harry John Filmer, 10, Corporation Buildings, Rissik Street, Johannesburg; registered August 16; capital, £60,000.

CAPITAL INCREASES AND DECREASES.

Engineering Supplies, Limited, Johannesburg; registered August 6; increased from £30,000 to £32,000.

Concordia Lydenburg, Ltd., Johannesburg; registered August 6; increased from £1,395 to £1,780.

Kempton Park Estate, Ltd., Johannesburg; registered August 6; decreased from £12,500 to £9,050.

Greatrex, Limited, Johannesburg; registered August 6; increased from £25,000 to £30,000.

The Modderfontein Deep Levels, Limited, Johannesburg; registered August 23; increased from £263,000 to £394,000.

Alpine Syndicate, Limited, Noordkaap; registered August 26; increased from £3,250 to £10,000.

The West Rand Fresh Meat Company, Limited, Krugersdorp; registered August 26; increased from £3,000 to £5,000.

Lewis, Limited, Krugersdorp; registered August 30; increased from £500 to £750.

The New Thor Diamond Mining Company, Limited, Johannesburg; registered August 6; increased from £14,500 to £50,000.

VOLUNTARY LIQUIDATION.

The following companies have been placed in voluntary liquidation :—

Sigma Building Company, Limited, Johannesburg.
Paardekraal Estates, Limited, Johannesburg.
Wonder Mine, Limited, Johannesburg.
Globe Literary Agents, Limited, Johannesburg.
Dolly Boy Syndicate, Limited, Johannesburg.
Simplex Drill, Limited, Johannesburg.
The Roodepoort Venture Syndicate, Limited, Johannesburg.

Tenders Accepted.

The South African Railways and Harbours publish the following statement of accepted tenders for general information: Baltic timber: 2,151 Petersburg standards—deals, 301 Petersburg standards—floorings, 171 Petersburg standards—ceilings, Kehler & Ronaasen, Port Elizabeth, at £42,529 16s. 3d. the lot, c.i.f. Capetown, Port Elizabeth, East London and Durban. Milling services: Any monthly quantity up to 500 bags, F. S. Rank, Germiston, at 1s. per bag of 180 lbs. net; any monthly quantity over 500 bags, but not exceeding 1,000 bags, F. S. Rank, Germiston, 10d. per bag of 180 lbs. net; any monthly quantity above 1,000 bags, F. S. Rank, Germiston, 8d. per bag of 180 lbs. net. Catering supplies, 1913-1914 (Cape, Transvaal and Orange Free State Provinces: Schedule "A" (Parts 1 and 2): Imported wines, spirits, etc.:

W. G. Stevens & Co., Liebermann, Bellstedt & Co., Hy. C. Collison, Ltd., E. K. Green & Co., Ltd., J. Wynne & Co., Rolfes Nebel & Co., Sellar Bros., Peters, Docke & Co., Stern & Co., Jooste & Bryant, Rintoul & Davis. Guinness' stout: E. & J. Burke, Ltd., Liebermann, Bellstedt & Co., Hy. C. Collison, Ltd., Rolfes, Nebel & Co. Mineral waters: W. G. Stevens & Co., Peters, Docke & Co., Sellar Bros., E. K. Green & Co., Rolfes, Nebel & Co., Liebermann, Bellstedt & Co. Liqueurs: Liebermann, Bellstedt & Co., Rolfes, Nebel & Co., E. K. Green & Co., Ltd., Peters, Docke & Co. Bitters: E. K. Green & Co., Ltd., Liebermann, Bellstedt & Co., Sellar Bros., J. D. Bosman. Schedule "B" (Part 1): Local malt liquors: Ohlsson's Cape Breweries, Ltd., Lion Brewery Depôt, Chandlers, Ltd., South African Breweries, Ltd., Leinberger & Co., Horwood & Gripper, Ltd., John Wynne & Co. Mineral waters: Van Riebeek Natural Mineral Water Co., Wordon & Pegram, Ltd., Liebermann, Bellstedt & Co., Mulvinal & Son. Carbonic acid gas: W. G. Stevens & Co., Carl Albert. Schedule "B" (Part 2): Local mineral waters: Ziman Bros., Bloemfontein Mineral Water Works, Crystal Springs Aerated Water Co., Kroonstad Mineral Water Co., Wordon & Pegram, Ltd., W. Dickson, E. S. Whyte & Sons, D. Green, M. Armstrong, A. Cockburn, Leslie & Son. Schedule "D": Cigarettes, tobacco, etc.: United Tobacco Co. (S.), Ltd., Hermann & Canard, Friedmann & Foy, Liebermann, Bellstedt & Co., Schadtler, Ltd., Stern & Co., Rolfes, Nebel & Co., Taddy & Co., M. Kaplan & Co., J. H. Stark & Co., United Tobacco Co. (N.), Ltd., L. Suzman, E. K. Green & Morison, Ltd. Schedule "C" (Part 1): Imported groceries: B. Lawrence & Co., Gardener, Williams & Co., C. H. Thrupp & Co. Schedule "C" (Part 2): South African groceries: Ginsberg, Ltd., C. H. Thrupp & Co., L. Bauman & Co., K. Gundelfinger, Mrs. H. J. Roth, B. Gundelfinger, Jameson & Co., Atkins & Co., L. Fatti & Co., Petersen, Ltd., Spilhaus & Co., Don & Co., Stewart & Sons, B. Lawrence & Co., Whyte & Co., Heynes, Mathew, Ltd., Sweet Cake Flour Packing Co., Ltd., Patlansky Bros. & Schauder.

Lists of tenders accepted will be found in the following "Gazettes": "Natal Gazette," 31st July; "Natal Gazette," 7th August; "Cape Gazette," 8th August; "Union Gazette," 8th August; printing, purchase of typewriters and conveyance of mails; also platelaying, etc., and for following services to S.A. Railways and Harbours: Palisade fencing, Wm. Bain & Co., Ltd., Johannesburg; fencing gates, Rayboulds, Ltd., Workington, England; teak logs and planks, W. & G. Scott, Ltd., Capetown; laundry work, Palace Steam Laundry, Johannesburg; De Luxe Steam Laundry, Pretoria; Mrs. A. Henneker, Bloemfontein; Empire Steam Laundries, Capetown; Model Electric Laundry, Port Elizabeth; M. Almond, Queenstown; E. W. Mowbray, Kimberley; Mrs. L. Webb, East London. "Union Gazette," 12th August, conveyance of mails, and various services to Public Works Department.

For supply of 1,600 distributor boxes for telegram forms, Purcell Yallop & Everett, Capetown, at 2s. [illegible] 10d. each.

Contracts Open.

CAPE PROVINCE.

For the supply of steel private boxes, Department of Posts and Telegraps. In "Gazette," 8th August. (Oct. 1.)

TRANSVAAL.

For supply of telephone cabinets to Department of Posts and Telegraps. In "Gazette," 19th August. (Sept. 17.)

For purchase of scrap material. In "Gazette," 22nd August. (Oct. 8.)

For erection of native wards, Krugersdorp Hospital; do. school and quarters, Kaffirskraal No. 301, district Heidelberg; do. Porters Lodge, Johannesburg Hospital, Johannesburg. In "Gazette," 26th August. (Sept. 19.)

ORANGE FREE STATE.

For erection of bridge over Fraser Spruit, [illegible]. In "Gazette," 15th August. (Sept. 16.)

For erection of school, Priors Siding, district Bethulie. In "Gazette," 26th August. (Sept. 23.)

NATAL.

For erection of bridge (Christison), over Umzimkulu River, Underberg Division. In "Natal Gazette," 21st August. (Sept. 15.)

For erection of wood and iron station buildings and quarters, Mooi River-Estcourt Deviation, Natal Main Line. In "Gazette," 26th August. (Sept. 16.)

Double Helical Gears

CUT DIRECT FROM THE SOLID WITH CONTINUOUS TEETH.

Local Representatives—
BELLAMY & LAMBIE, Consolidated Building
P.O. Box 453, Johannesburg.

See Last Week's Advt.

'The Jumpers' Gold Mining Company

LIMITED.
(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE is hereby given that the Twenty-Fourth Annual Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Exploration Building, Commissioner Street, Johannesburg, on TUESDAY, the 11th day of NOVEMBER, 1913, at 11 o'clock a.m., for the following purposes:—

1. To receive the Directors' and Auditors' Reports, Balance Sheet and Profit and Loss Accounts for the period ended 15th August, 1913.
2. To elect two Directors in the place of Comte F. de Ferrières and Mr. H. P. Rogers, who retire in terms of the Articles of Association, but being eligible offer themselves for re-election.
3. To elect Auditors for the ensuing year and to fix the remuneration for the past Audit.
4. To transact any other business which may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 5th to the 11th November, 1913, both days inclusive.

By Order of the Board.
CREDIT MOBILIER FRANÇAIS,
Secretaries,
Per C. H. HOLDER.

Head Office, Johannesburg, 5th September, 1913.

Johannesburg Consolidated Investment

COMPANY, LIMITED.
(INCORPORATED IN THE TRANSVAAL.)

Notice of General Meeting of Shareholders.

NOTICE IS HEREBY GIVEN that the Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room of the Johannesburg Consolidated Investment Company, Limited, on MONDAY, the 27th OCTOBER, 1913, at 11.30 o'clock in the forenoon, for the purposes following:

To receive and consider the Statement of Accounts and Balance Sheet for the period ending the 30th June, 1913, and the Report of the Directors and Auditors thereon.

To elect four Directors in place of those retiring in terms of the Company's Articles of Association.

To elect Auditors, and to fix their remuneration for the past financial year, and to transact any other ordinary business of the Company.

By Order of the Board.
W. H. MARDALL,
Secretary.

Johannesburg,
6th September, 1913.

Specimen copies of the *South African Mining Journal* can be had from our Agents, The Argus Printing and Publishing Co., Ltd., Byron House, 82-85, Fleet Street, London, E.C.

South African Railways.

CHEAP HOLIDAY FARES.

:: :: The Summer Season :: ::

and

Christmas and New Year Holidays.

1. Tickets at single fare for the return journey will be issued between all S.A.R. stations as follows:—

(a) For distances over 50 miles—during the period 1st November, 1913, to the 10th January, 1914 (inclusive).

(b) For distances of 50 miles and under—during the period 5th December, 1913, to the 10th January, 1914 (inclusive).

Tickets for journeys exceeding 25 miles will be available for 3 months, while those for distances 25 miles and under will be available for four days from the date of issue.

2. Tickets at special reduced fares will be issued on certain days during the months of October, January, February and March to Capetown, the Cape Peninsula and Somerset Strand with an availability of three months from the date of issue.

3. Tickets at special reduced fares will be issued on certain days during the months of January and February to East London, Port Elizabeth, Port Alfred, Mossel Bay and George (for Knysna and The Wilderness).

4. Special fares for Land and Sea Tours will be arranged in conjunction with various Steamship Companies for various dates during the months of November. December and January.

5. Special fares will operate from all the large centres to various places in the vicinity.

Full details of all the above facilities will be announced shortly.

Johannesburg,
August, 1913.

W. W. HOY,
General Manager.

THE SOUTH AFRICAN
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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 2d.

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Notes and News.

The Colour Question Underground.

The article in our last issue on the colour question underground has not gone unnoticed. It is understood that the Young Unionists debated it in none too friendly a spirit and in the Presidential Address of Mr. W. A. Martin at the Congress of Chambers of Commerce at Kimberley the subject was ventilated very frankly and fully. Even the bright young man who supplies the *Rand Daily Mail* with racy comments on his experiences at the mythical Scamper's Deep has allowed it to preoccupy him, to the exclusion of trivial things, and its discovery seems to have engendered a distrust of Labour leaders that amounts to rank disloyalty in a member of the T.M.A. The fringe of the question, of course, has only been touched, and, whether we like it or not, more is bound to be heard about it in the days to come.

* * * *

Roberts Victor and Crown Diamonds.

The interim dividend of ten per cent. declared by the Roberts Victor Company this week affords tangible evidence of the vitality of this rejuvenated concern. The latest reports from the mine are of a glowing description, and the position seems to be steadily improving. At the Crown diamond mine, under the same control, the excellent initial returns are being well maintained, and the prospects are daily improving. During the week a 72-carat stone of first-rate quality was discovered, and this is but one of several "finds" that go to prove that the value of the property is yet hardly realised.

* * * *

Naboom Tins.

The S.A. Tin property, under its new name of Doornhoek Tins, is said to be showing improving values in depth. Welgevonden, belonging to African Farms, Ltd., has begun its producing career satisfactorily; and it is not to be wondered at that the ground in between or adjacent to these properties is attracting attention. The freehold portion of the farm Welgevonden is now being floated as a private company, under the name of Naboom Tins, Ltd. Dr. Merensky has made an encouraging report, and the money now being put up will be devoted to developing the claims according to the advice contained in that report. The prospects seem encouraging.

* * * *

National Diamonds.

The attempt to maintain interest in National Diamonds is hardly likely to succeed, in view of the very persistent questions that are being asked—and left unanswered—regarding the property. Some of these are: (1) Why the results of washing since July 15—*i.e.*, when washing started—have not been published? (2) Were 6,000 loads washed from No. 1 mine for a recovery of 180 carats? (3) Is it not a fact that a man well known in diamond mining circles expressed the opinion to the Chairman that the running of the plant was all that could be desired? (4) Can it be denied that during July—until ordered to wash tailings—3,900 loads were washed from the No. 1 mine for a recovery of 82 carats? (5) Has the washing of stuff from No. 1 been abandoned? Many other questions have been submitted to us, but the foregoing will suffice to go on with.

* * * *

A "Goldfields" Water Scheme.

The Simmer and Jack and the neighbouring companies of the Consolidated Gold Fields group have come to an arrangement with a view to providing, as far as it may be possible to do so, against water shortages in future years. The initial cost of the scheme, which is shown in the balance sheet of the Simmer and Jack Company under the head of Contingent Liabilities, will be borne by that company. The prices which the company will charge for the sale of its water have been fixed at a figure which will enable it eventually to recoup itself for its initial outlay.

Lightning Dangers.

According to a press dispatch, a bolt of lightning travelled through nearly a mile of tunnel in the Copper Reef mine at Globe, Ariz., on August 5th, jumped 300 ft. down a winze and nearly tore a leg off one miner and shocked more than a score of others. The bolt was conducted through the tunnel by the steel rails. Accidents underground resulting from lightning are not without precedent. We believe there is a well authenticated case in south-eastern Missouri of a head frame being struck by lightning and the current passing down pipe lines in the shaft and prematurely setting off an electric firing system in one of the stopes, the last happening in some unexplained way. If the story that comes from the Copper Reef mine is true, the rails in the tunnel must have been extraordinarily well insulated.

* * * *

The Messina Co.'s Operations.

At Messina operations are proceeding in an eminently satisfactory manner. The outstanding feature at the property at present is the running of the smelting furnaces recently installed. The No. 1 furnace had a good run last month and turned out 76 tons of matte of an average assay value of just under 51 per cent. copper. The second furnace was started up on August 28. As to other details of the new equipment, the Huntingdon mill and vanner plants are completed and running satisfactorily, and the new concentrating plant is practically completed. Development on the Bonanza lode at the eighth and ninth levels (No. 5 shaft) has disclosed ore of good value over considerable thickness of lode. The railway is now fast advancing towards Messina and it is quite clear that this property is to become a factor of increasing importance in Transvaal mining. We hope at an early date to give a full and illustrated account of the mine.

* * * *

Central Mining Position.

The passing of the Central Mining Corporation's interim dividend called forth much comment in mail week in London. Considering the unfavourable market conditions prevailing during the first half of the current year, the Central Mining and Investment Corporation did by no means badly in earning profits estimated at £215,000, against £320,000 for the whole of 1912. It has come, therefore, as all the greater a disappointment, though perhaps hardly a surprise, to shareholders that the directors have decided to make no interim distribution. A twelvemonth ago 2½ per cent. (6s. per share) was declared and a final dividend of similar amount was paid this May, leaving £72,000 odd to go forward into the current year's accounts. At end 1912 the depreciation reserve account of £450,000 created a twelvemonth previously was considered still fully sufficient for its purpose. But "in view of the continued depreciation in the value of South African Mining shares, temporarily accentuated by the recent labour troubles on the Witwatersrand," the directors are no doubt wise in postponing any decision as to the dividend for 1913 until the final accounts for the year are available.

* * * *

Trade and the Mining Industry.

During the years 1909, 1910, and 1911 great extensions took place in the mining industry, necessitating the importation of large quantities of new plant, notably in connection with the Randfontein and East Rand Companies, says Sir R. S. Holland in his annual report. The imports of machinery, etc., were accordingly very much inflated during these years, as is seen in the figures. The value of these imports, however, is steadily falling to the level at which they ordinarily stand under normal conditions of regular working. What these conditions mean to the oversea manufacturer is not entirely reflected in the total import values contained in the classification adopted for the purposes of this report. This classification can only include such items as are known to be used almost solely for mining purposes, *e.g.*, mining machinery, mining buckets, and tip trucks, battery cloth, tanks and vats, blasting compounds, etc. For this reason, too, electrical machinery and material have been given a separate class, seeing that these goods are used for many purposes other than mining. Miscellaneous machinery and requisites are also separately classified, but that class, likewise, includes a great number of articles used for mining purposes. The mines are also big consumers of timber, foodstuffs for the labourers, tools and hardware, iron and steel, etc., all of which had to be otherwise classified, owing to the fact that such articles are also in general demand. But, while the value of imports contained in the "mining" class covers a comparatively small portion of the total purchases of the mines, the classification adopted in this report is a sufficient true index of the position of the mining industry, and that it reflects the percentage fluctuations which take place in the total value of trade with the mines. The drop in the imports of machinery and mining material for 1912 does not mean retrogression of the mining industry. It marks the gradual termination of contracts affecting large electrification schemes and a temporary absence of the development of new mines owing to lack of capital, due largely to anxieties arising out of the European situation, to apprehension in regard to taxation, to the fact that there have been great demands for capital in other directions, and to the high rates ruling in the money market throughout the world.

* * * *

A Cost of Living Report.

It is now nearly two years since the Administration of Southern Rhodesia appointed a Commission composed of Sir Edgar Walton, Messrs. George Mitchell, F. Eyles, M. E. Cleveland, and E. C. Baxter to inquire into the question of the cost of living in Rhodesia. The report signed by the members of the Committee, excepting the Chairman (Sir Edgar Walton) was issued recently, and, in view of the appointment of an Economic Commission, a summary of its recommendations is of interest. Some of the conclusions of the Committee are that the local production of foodstuffs is chiefly confined to beef, maize, dairy produce, poultry, eggs, and vegetables; but the local supplies of dairy produce, etc., are insufficient and irregular, and prices often excessive. The cost of South African produce to the Rhodesian consumer sometimes exceeds by 100 per cent. the prime cost, although the expenses of importation are limited to railage and forwarding charges. Beef costs from 10d. to 1s. per lb., and mutton from 1s. to 1s. 3d. per lb. Imported necessary foodstuffs, soap, candles, etc., cost the consumer seldom less than double the prime cost, and often exceed that proportion. Building material and furniture cost three times the prime cost. The main factor governing these prices is the charge for railway haulage, which is greater than the gross total for ocean freights, duty, and other charges, and, in fact, is often two or three times the amount of all these charges. Business working expenses in Rhodesia are stated to be very high owing to: (1) high wages; (2) large capital invested; (3) the credit system. High wages are both a result of, and a cause contributing to, the high cost of living. They will come down in sympathy with a reduction of the direct expenses of producing and importing the necessaries of life. The Committee considered that the burden of the credit system could be removed by the merchants themselves. The scale of native wages is rising. The majority of men in Rhodesia earn wages from £18 to £30 per month. The single man can save on the minimum. The married man in the towns can hardly make both ends meet on the maximum. The heaviest item is rent, which discourages marriage. Expenditure on luxuries, particularly liquor, sport, and entertainments is high amongst all classes. Two factors determine and maintain the high cost of living: (1) The small proportion of necessary commodities produced locally; (2) the long and expensive railway route over which imported articles are hauled. The true root cause of both is one and the same—the smallness of the population and its stationary position as to numbers. Anything, the Committee concludes, that would bring a rapid influx of population would immediately react upon railway rates and local production.

* * * *

Measurement of Crushing Efficiency.

There is a significant note regarding the relative merits of Kick's vs. Rittinger's laws at the end of that portion of the annual report of the Union Mines Department dealing with the testing laboratory. It is noteworthy that for crushing and grinding machines of many types, noisy claims for superiority are made. This situation cannot be otherwise than prejudicial to the best interests of the mill operators who desire to obtain a certain definite product in the most economical way. Search for the reasons governing the existing condition of counter-claims and confusion, reveals the fact that there is no unit for measuring the effective work done in such machines. As the *Engineering and Mining Journal* points out, it is hopeless to expect to find the best appliance for any use without a measure for its efficiency. In no other department of milling does such a complete lack of harmony exist. It is true that energetic workers have been trying to devise some satisfactory system, but different methods produce different results and there is nothing universally applicable. The work of Stadler outlined a method which has served as a basis for enlightening experiment, but it has not been universally accepted as representing the truth in all cases. Del Mar has advocated a classification differing somewhat from that of Stadler, and more recently A. O. Gates published an exhaustive study advancing another basis for calculation. The noteworthy circumstance in connection with the publication of all these studies is the exceedingly restricted amount of discussion that has followed. It is a complicated and difficult subject, no doubt, and active operators rarely are able to apply the necessary time to the mastery of so abstruse a subject. We might, however, expect the scientist to undertake the task. It is to be hoped that even now the subject is receiving serious attention and that a measure unit of universal application will be forthcoming.

* * * *

A Gold and Diamond Property.

It is not usual for a company originally formed to exploit occurrences of gold to find that its property has distinct possibilities of yielding precious stones. Yet such has been the experience of the New Gold Venture Syndicate, a concern originally formed to deal with gold-bearing reefs on the farms Abelskop and Goudplaats in the South-Western Transvaal. At a meeting of the company, held recently, Mr. Wm. Dalrymple, who presided, stated that for some time past there had been certain activity in alluvial diamond prospecting in the Schweizer-Reneke district, and finds of alluvial diamonds had taken place on farms in the vicinity of the property. Applications had been received for the right to prospect the farms for precious stones, and the directors are now considering the granting of prospecting rights under conditions which will not impose any liability on the syndicate. There have been numerous instances of companies originally floated to develop and work coal beds having been found to contain gold in the deeper levels, but we think this is the first case of an auriferous venture being found to contain gems which has come to our notice.

* * * *

A Machavie Strike.

An important new strike has been made on the property of the Machavie Gold Mining Company, where some 300 or 400 new claims have been pegged out within the last ten days. It appears that while boring for water at a distance from the supposed line of reef, a splendid body of ore was struck, the assays of which would indicate that the proposition will be more valuable than any yet struck.

TOPICS OF THE WEEK.

LAND HUNGER & LAND SETTLEMENT.

It is a truism that closer settlement is one of the most important questions before this country to-day. Despite oft-reiterated appeals in the Press and a chorus of reports from Commissions and Select Committees the Government in this regard has in the past pursued—to say the least of it—a very half-hearted policy. It would seem that where the Government has failed, private enterprise is now about to enter the field and thoroughly and comprehensively to do what the State, with almost culpable neglect, has hitherto left undone. In another part of this issue are given the details of the new Union Land Settlement Company of South Africa, which proposes, as its name implies, to undertake those responsibilities and assume those functions that are, in other countries, regarded as the privilege and obligation of the State. A careful perusal of the prospectus of the new venture shows that a great deal of clear thinking, wide experience and good counsel have gone to its preparation. Nothing haphazard or hurried is traceable in the framing of the scheme, which has plainly been the mature product of years of excogitation in close touch with the realities of the situation. The idea is simplicity itself. The new company will take over from Messrs. Lewis and Marks, at a moderate and reasonable valuation, their enormous, yet carefully picked, areas of excellent land scattered through this and neighbouring Provinces. That land is daily increasing in value, yet the purchase price—to be paid, be it noted, entirely in shares—is fixed at a figure that is very little higher than the original purchase price. Put briefly, the land to be taken over is the best of its kind. Messrs. Lewis and Marks have long been famous for the skill and unerring discrimination shown in their selection years ago of the pick of Transvaal farms. In the Marico, Pretoria and Rustenburg districts their holdings have been at once the envy and admiration of the local farmers. They bought, with wise prevision, before the beginnings of a " boom " in land were foreseen. Therefore they bought in leisurely fashion, without haste, and only after due and careful expert examination of each farm. It is not too much to say that no land company in the Transvaal was better served in that respect, enjoyed closer attention from its principals, or possessed greater opportunities for securing the best ground. Even the Bechuanaland areas, upon the value of which less emphasis is laid have been adjudged by independent testimony to be worth more than the figure at which they are put in. The new company will reap where its promoters have sown. Every reasonable precaution to ensure the success of the venture has been taken. The directors are all men of substance in the world of business or farming, of outstanding merit and capacity, and with a " stake in the country." In the Cape Colony Senator Fuller's is a name to conjure with for experience in administration, life-long knowledge of South African conditions, and the success that rewards thoroughness. General Delarey, in the Transvaal, bears an honoured name, and his presence and advice on the board should prove invaluable. In Messrs. Isaac Lewis and Samuel Marks, the company has two life-directors who—in Lord Selborne's memorable words—" have done more for the cause of agriculture in this Province than any other two living men," and whose whole-hearted efforts on behalf of the company are guaranteed by the fact that their interests are unreservedly bound up with it. Moreover, in its general manager, Mr. W. J. Palmer, the undertaking has an asset of no small importance, for initiative and experience are bound to play a large part in realising its great and manifold possibilities. Again, the finances of the company appear to be arranged upon farseeing and conservative lines. A working capital of £150,000 combined with a constantly swelling revenue seems adequate to meet all the monetary demands likely to be made upon the concern. Already the amount necessary to pay a preference dividend of 6 per cent. is assured. It is true that the published prospectus does not give any details of the lines upon which settlers are to be attracted and encouraged. But these are known to be of the most liberal description. Each case will necessarily be judged on its merits, and financial assistance at a minimum rate of interest will, in suitable cases, be ungrudgingly accorded. Further, it is the aim of the promoters to attract the "small man" as an investor, and for the latter the opportunity to become a part proprietor in a well-managed and promising land-owning concern is undoubtedly unique. Singularly few chances of satisfying the perennial land hunger come the way of the "small man" in South Africa. Usually land is sold wholesale, in great blocks of morgen—in other and older countries they would be called estates—that appeal only to the wealthy. The comparatively poor man is entirely out of the market. The new company will give him his chance. He can, by buying its shares, become a sleeping partner in a great organization that must go forward and cannot, as far as it is humanly possible to see, go back. "Time is with it"; and the so-called "unearned increment" of the Socialists—in reality the just reward of foresight, prudence and saving—which land in South Africa is daily gathering to itself, in geometrical progression, cannot fail, with the passing of years, to result to the proprietors, big and small alike, in certain and substantial profits.

COMING LEGISLATION AND THE LATEST CONCESSIONS.

WHATEVER little public sympathy yet remains with the Federation of Trades is rapidly fading before the destructive, secret and obscurantist methods of that body. Entirely through the good offices of the Government and the Chamber of Mines, the public were this week let into the secret history of the recent past and put in possession of the facts regarding the tripartite negotiations carried on between Government, employers and the Federation. It appears that for some inscrutable reason the Federation killed the idea of a round-table conference between the employers and the Transvaal Miners' Association by insisting on the presence of a nominee of its own unacquainted with the questions at issue. It is difficult to find words sufficiently strong to condemn this arbitrary, high-handed and unjustifiable action on the part of the Federation. The proposal having therefore fallen through, the industrial leaders, at the request of the Minister of Mines, have decided to recognise the Miners' Association under the following conditions, to quote from the letter of Sir Lionel Phillips to the Minister of Mines:—"I am desired to say (Sir Lionel Phillips wrote) that if you can satisfy yourself that the officials of the Transvaal Miners' Association are authorised to speak for its members, and can obtain from the Association an assurance, which you consider satisfactory, that it will, as previously mentioned, take no steps of a coercive character designed to augment its membership or to penalise men who wish to remain independent, and that it will not attempt to cause dissension or interfere in any matters of internal management, the employers are agreeable, pending legislation next session regarding the general question of the status of trades unions, to authorise their managers to meet officials of the Transvaal Miners' Association in respect to any disputes with the members of the Association in their service which cannot be settled directly with such members." How the new arrangement will work out in practice remains to be seen, and one can only express the hope that the leaders will use their new-won power with a due sense of the responsibility it entails.

Industrial questions have of late assumed such increased importance in South Africa that they impinge very directly upon commerce. At Kimberley during the week the indefatigable Secretary for Mines, Mr. Warington Smyth, has been used as a mouthpiece by the Government to acquaint the delegates to the Parliament of Commerce there assembled with the efforts now being made to tackle the complex and manifold industrial problems thrust upon its urgent attention by the recent upheaval. As reported, Mr. Warington Smyth's speech seems very clear, if academic, and certainly bore evidence of a vast deal of study devoted to the industrial legislation of other countries and British Colonies. The Secretary for Mines does not pretend for one moment that the work of his Department has been completed in this respect, or that finality has been reached on any of the questions he so ably reviewed. But he said enough to show that industrial problems were being approached in the right spirit, that the lessons of other countries were being analysed, and that no mere perfunctory programme of reform, borrowed ready-made from the Statute Books of other British Dominions, would be dished up this time as a panacea for recent troubles. Mr. Warington Smyth pointed out that an Economic Commission had been appointed, under the chairmanship of a well-known English economist, to go into questions dealing with rates of wages, minimum wage, cost of production, cost of living, overtime payments and night shifts, which were raised during the industrial dispute in July. As regards the promised legislation, the first Bill is the Factory Bill. This has already been printed and forwarded to various bodies. With regard to it, Mr. Smyth said that certain amendments suggested last year by bodies with whom he came in contact regarding seasonal industries and industries where continuous chemical or other processes were used, had been provided for in the present draft, enabling the Minister to deal with the working hours provided under the Act. Next is the Workmen's Wages Lien Bill, a comparatively simple measure, dealing with workmen's wages and liens only and not with those of contractors or sub-contractors, because the evidence in possession of the Department shows that all cases of hardship which occur are in cases of wage-earners and that sub-contractors are able, as a rule, fairly to protect their own interests. The next Bill is the Workmen's Compensation Act Consolidating Bill for the Union, which will deal with this subject on the lines of the Transvaal and Cape Acts. This will be circulated as soon as drafted. The next on the list is the Mines Benefit Society Proposed Consolidation Bill, largely a Witwatersrand matter, and in process of consideration. Mr. Smyth pointed out that the two really important matters were the question of the prevention of industrial disputes and the question of the status of trade unions. He showed that there were certain disadvantages in the Canadian and Transvaal Acts. It had been complained that the machinery took some time to bring into operation, and one thing was clear—that any machinery should operate cheaply and without loss of time. That was important from the point of view of the wage-earner and everybody concerned. In his opinion an addition was required to be made to the Act providing for some form of simple conciliation boards on which employers and employed could sit to discuss minor matters at any time, and a second amendment to that was, in his opinion, necessary—if the Canadian and Transvaal principle was to be followed by the Legislature—enabling the Minister in charge of the Department to direct an inquiry to be held at any time and into any matter where he considered the circumstances of any trade or industry were unsatisfactory or involved hardship to the employees, or where he considered that for any reason an investigation was desirable. He also gave it as the opinion of the Minister that trade unions should be recognised.

It is plain from all this that the Government is in earnest and is being well served. The Department of Mines may have been open to the criticism that it recognised and treated with the officials of the T.M.A. at a time when the employers refused to do so. When it showed any sympathy at all it was invariably towards the men, and it nearly always threw its weight into the scale on their side. Doubtless in this attitude it was actuated by the best motives, holding that a great, rich, highly-organised industry could look after itself, while the men could not. Now, however, with the recognition of the Miners' Association the position is different, and the Department may be expected to hold the scales more evenly. At any rate one can sympathise with it in the vast amount of extra work involved by recent developments. The "substantial concessions" granted by the employers to the men naturally mean more work for mine inspectors and the whole Department. And the research work involved in preparing new legislation and machinery to cope with the new conditions must represent considerable labour of no light description. One can only hope that the reforming zeal of the Department will not, in excess of energy, outrun the actual needs of the situation or the ability of the industry to accept and adopt innovations without undue loss or damage to its credit.

THE LOT OF THE RAND MINE WORKER.

A Special Enquiry into the Conditions of Life and Work along the Reef.

VI.—A SUMMING UP.

The series of articles that have been appearing in this journal for the past six weeks on the lot of the Rand mine worker have, we venture to state, elicited some interesting facts on the subject under consideration, facts which, although they are doubtless common knowledge along the Reef, are not perhaps fully appreciated or realised elsewhere. It may be alleged that the articles do not go deep enough into the life and work of the average Rand employee. To this we would reply that this paper is not the Economic Commission which is shortly to investigate with judicial thoroughness the matters which we have merely attempted, in some manner, to elucidate and place in a truthful perspective. Many people in this country and in Europe appear to have as utterly false impressions of the real situation in regard to white labour along the Main Reef series as were those impressions which were gained by half the population of England through the medium of " slave posters " as to the conditions under which Chinese worked on the Rand a few years ago. If the series of articles here concluded have been the means of dispelling some of the illusions existing in, we fear, the minds of many they will have served their purpose. For the rest, it may be pointed out that the powers of a paper in the examination of witnesses in connection with such a great and intricate subject as this are necessarily limited, and the depth to which large problems concerning the welfare of thousands of workers can be probed is necessarily shallow in comparison with the powers of investigation vested in a Government-appointed Commission.

The Promised Reforms.

Since these articles were commenced the mine owners have conceded an important point to the men in that they have agreed to recognise, under certain conditions, the Transvaal Miners' Association. The other reforms promised as a result of the July negotiations are now being carried into effect, although we gather that some of these "demands" are unsatisfactory to the great majority of the men. We do not believe, for instance, that if balloted for right along the Reef, the payment of wages weekly instead of monthly as heretofore and the management of benefit and co-operative societies by Government would represent the wishes of the men.

Underground Improvements.

In our search for truth underground we had no desire to seek the opinions of firebrands. We sought instead the views of the more intelligent and sound reasoning men, and the general concensus of opinion of workers of this class is that health conditions in the mines have improved greatly in the past few years and that the Rand compares most favourably with other mining fields in regard to general conditions of employment, the work a white man is called upon to do, the pay he receives, and the circumstances of living when the working hours are over. The first point which we venture to submit has been established is an important one, viz., that health conditions in the mines of the Rand are improving. The view adopted by many detractors of the industry is that the rates of pay, no matter how high, the conditions of living above ground, no matter how good, are all counterbalanced by phthisis. In fact, some go further and state that the rates of pay, etc., considering the ravages of this disease, are insufficient. Now, there can be no question that in the past conditions in regard to dust-allaying, sanitation, and ventilation left a great deal to be desired. No good purpose can be gained by labouring this point. The essential factor to be determined is whether conditions have improved. The expressions of opinion by a number of level-headed miners, as recorded in the columns of this journal, make it, we think, quite clear that a large and very material betterment has taken place during the past few years. There can be no doubt, too, that every effort is being made to further improve matters, although we must cordially confess it is, speaking of the Reef generally, difficult to see where practical scope remains for any further radical and remarkable advance to be made, save in regard to educating the men up to the necessity for taking full advantage of the ways and means now provided for allaying dust and for keeping underground workings cool and healthy. That it seems is a great need of the industry to-day—that and the prevalence of a better feeling of *esprit de corps*, and a disposition to give and take a little sometimes, not only amongst the white men themselves but amongst underground officials and native workers as well.

The Importance of Being Careful.

The enquiries we have instituted fail altogether to substantiate the general impression that the average life of a Rand miner is a mere matter of six or seven years. It may have been observed that each one of our informants stated that a man should labour for at least double that period in Main Reef mines without suffering in health, *provided he took care of himself.* That a man be constitutionally sound is the crux of this question of the duration of the miner's life, and the way he lives at surface is no doubt as important a consideration as the manner in which he goes about his duties underground. And in this connection it may be added that something can be done to make life on the mines more attractive. Probably concerts and frequent social evenings would have some good effect.

An Industrial Anomaly.

As to wages, it has been pretty clearly demonstrated in recent issues of this journal that they are higher on the mines of the Witwatersrand than in any other mining field. And a most interesting fact is that the rates of pay are on the average higher to-day than they were seventeen or eighteen years ago when the costs of living were substantially greater and the facilities for comfortable living and enjoyable recreation were substantially less. In all new countries and particularly in mining camps the tendency is for living costs to decline as the opening up of the country is proceeded with, and railway rates, rents and freight charges are reduced. And in parallel line the rates of wages usually decline also. Here, however, on the Rand a seeming anomaly rules and instead of the two curves of costs of living and rates of wages following the same course the tendency of the former has been downwards and that of the latter upwards.

The Real Worker

Perhaps the most instructive point of all elucidated by this inquiry has been the admission by some of the men that one great advantage of the Witwatersrand over other mining fields is that on the Main Reef series white men do far less actual work than in other mining countries. In fact, it seems pretty clear that the real worker of the Main Reef is the native. This is a fact that doubtless a comparatively small number of the white men in the mines would care to directly admit, but there is, all the same, a tacit admission of this elemental economic fact in their statements that the real grinding hard work which has to be performed by white men in other fields is the lot of the black man on the Main Reef series.

In concluding this series of articles too much stress cannot be laid on the logical view that apart from any humane considerations it must be to the benefit of the Mining Houses themselves to have their employees contented and healthy. A contented man does far more work and far better work than a malcontent. And a healthy man is obviously worth a good deal more than an unhealthy one. So that assuming for argument's sake the Rand mine owner is a monster wholly bereft of any of the milk of human kindness, a mere money-grabbing automaton, then it must be conceded that he would be acting to his own disadvantage were he to tolerate the unsatisfactory state of affairs which the many detractors of the industry so glibly picture for Home and "outside" delectation as obtaining locally.

WIT. DEEP'S PURCHASE OF CLAIMS.

Preliminary to Further Negotiations with the Knights G.M. Co.

A MEETING of shareholders in the Witwatersrand Deep G.M. Company is called for November 21st for the purpose of considering and, if thought fit, ratifying a provisional agreement providing for the increase of the Witwatersrand Deep Company's property by 14 claims. The sellers of this block are the New Transvaal Chemical Comany, Ltd., and the purchase price is £3,000 per claim. It is clear that the present negotiations are but the forerunners of another deal or other deals as between the Witwatersrand Deep Company and the Witwatersrand or Knights G.M. Company. As in the case of the City and Suburban and the City Deep, some adjustment of boundaries and transfer of claims between these two concerns seems advisable. The claims which it is now proposed to acquire from the New Transvaal Chemical Company, Ltd., are situated in a compact block near the western boundary of the Witwatersrand Deep property and would be opened up by continuation of the west incline shaft of the Witwatersrand Deep. The upper portion of this block is in the form of a right-angled triangle. The lower part exists as a long thin piece of ground running parallel to the bottom of the T piece of the Knights Company on one side and with an irregularly shaped piece of ground of the Knights situated in the Witwatersrand Deep property on the other. By reference to a map, it will be evident that it would be difficult for the Witwatersrand Deep Company to work the lower portion of the block in question, but a proposal is under consideration for the adjustment of the boundaries of the properties of the Witwatersrand Deep Company and the Witwatersrand Gold Mining Company, Ltd., which would entail the sale to that company, at cost price, of a a portion of the block of claims now proposed to be purchased. Such an arrangement would necessarily require to be submitted to shareholders for their approval at a later date. The consulting engineer of the Witwatersrand Deep has recommended to the board the purchase of these claims and the adjustment of boundaries, as he anticipates a satisfactory working profit upon the price proposed to be paid, and mining operations in the lower levels of the property would be greatly facilitated by this arrangement. For the above reasons the directors have no hesitation in recommending to shareholders the ratification of the provisional agreement, the principal features of which are referred to in the notice calling the special meeting of shareholders.

PROSPECTS OF THE SUB NIGEL.

Points from Superintending Engineer's Annual Report—Increased Profits and Ore Reserves—Development Outlook.

IN the course of his annual report, covering the operations at the Sub Nigel during the year ended 30th June, 1913, the Superintending Engineer, Mr. C. D. Leslie, writes:—The fully developed ore reserves at 30th June, 1912, were estimated to be 85,000 milling tons of an average mill value of 8·9 dwts.;. this is equivalent to 113,300 mine (or unsorted) tons of an average value of 6·93 dwts. The estimated reserves at 30th June, 1913, were 132,500 mine tons, fully developed, of an average value of 7·8 dwts., and 39,500 mine tons, partially developed, of an indicated grade of 8·1 dwts. The reef in "E" shaft was intersected on the 24th July last at a distance of 1,745 feet on the incline, or a vertical depth of 1,251 feet below the collar of the shaft, the average of ten samples taken around the periphery of the shaft at the point of intersection being 1·8 dwts. over a width of 6 inches. East and west drives were started from the point of intersection, and at the end of August had been advanced 85½ feet, the latest sampling indicating an average reef value of 4·23 dwts. over 7·54 inches. Development in this large unexplored area of the mine will be continued as rapidly as possible, but it is feared that a considerable time must elapse before sufficient information becomes available as to the position of the dykes in the neighbourhood of "E" shaft, as well as to the position of the reef on either side of them and some indication of its value. The development footage accomplished during the year amounted to 5,146 feet, of which 3,894 feet were sampled, indicating a reef width of 9·13 inches and a reef value of 31·41 dwts. A working profit of £26,948 was obtained from 56,172 tons treated, as compared with £3,829 from 52,328 tons during the preceding year, while the gold reserve account was increased from 500 to 600 ozs. In addition to the extra tonnage treated, other contributory factors towards this result were an increase in recovery value of over 3s. per ton, and a reduction in working costs of 5s. per ton milled. The real reduction in working costs is considerably less than recorded above, because, up to the 30th June, 1912, exploratory work was charged to working costs, but during the period under review the cost of this work, amounting to £7.962 10s. 8d., equal to 2s. 10·021d. per ton milled, has been transferred to capital account. An additional tube mill was installed during the year, the foundations of 20 stamps renewed, and certain alterations to the sand and slime plant, etc., effected, in order to increase the capacity of your reduction works to 5,000 tons per month, while the hoist and boiler at "B" shaft were dismantled and re-erected at "C" shaft. The greater part of the cost of the abovementioned work was charged to renewals, and accounts for the large amount of £3,560 3s. 11d., equal to 1s. 3·211d. per ton milled, appearing in working costs under that heading.

Natal Coal Output for July.

The monthly return issued by the Mines Department in connection with the Natal coal industry during the month of July shows an increase of 12,330 tons, as compared with the corresponding month of the previous year, the figures being 250,310 tons for July, 1913, and 237,980 tons for July, 1912. Twenty collieries contributed to this result, the Dundee Coal Company heading the list with 38,399 tons, the lowest output being 5 tons from the Vaalbank. The coal bunkered at Durban during July amounted to 112,773 tons, and the coal exported consisted of 17,396 tons sent oversea and 12,395 tons to ports in the Union. The labour employed is represented by a total of 551 Europeans, an increase of 43 on last year's figures for July. The number of Asiatics employed was 3,961, and natives and other coloureds 7,346. On the total number of persons employed the figures show an increase of 1,293 persons, the total number for July last year being 10,565.

THE DIAMOND BEARING ALLUVIALS OF SCHWEIZER-RENEKE.

The South-Western Transvaal's Newest Field—Prospects of the Greig Diamonds Company —Geology of the Field Described.

Two years ago when discoveries on Mooifontein attracted attention to the alluvial diamond fields of the Bloemhof district it was little thought that the gem-bearing area would be proved to be of such large dimensions as are at present established. After the exhaustion of the richest runs on Mooifontein, London and other farms and the ground immediately adjoining, the township of Bloemhof attracted a large number of diggers. Later the Eastleigh diggings came into favour. As a consequence prospecting and digging operations are now proceeding all over the South-Western Transvaal, and for the first six months of the current year the various diggings produced diamonds worth £278,110.

Views of Workings, Greig Diamond Property

To-day the diamondiferous gravels of Schweizer-Reneke are the centre of interest. The little township of Schweizer-Reneke lies about 38 miles to the north-west of Bloemhof and may be reached by a fairly good road which passes through the farm London.

Rietput Discoveries.

About eighteen months ago diggers commenced operations on the farm Rietput, situated immediately to the north of the town lands of Schweizer-Reneke. The returns from Rietput have been very satisfactory. There is no great extent of gravel on the farm but up to date diamonds of a total value of over £50,000 have been produced from about 200 claims of ground—each 45 ft. by 45 ft.—and the claims as yet unexhausted may yield a further £20,000 or so. A parcel of Rietput diamonds was on view in Johannesburg a few days ago. The stones were generally acknowledged to be of exceptionally fine quality, and, from what we can learn, the majority of diggers on this farm have " found " well.

Formation of the Greig Diamonds Company.

Largely as a result of the success attained on Rietput attention has recently been directed to the town lands of Schweizer-Reneke. Early in the year prospecting operations were commenced and satisfactory returns were recorded. In the past several attempts have been made to have the town lands of Schweizer-Reneke proclaimed but for a variety of reasons these have proved abortive. A month or two ago, however, a company styled " Greig Diamonds (Schweizer-Reneke Town Lands), Limited," was formed to acquire and work certain alluvial bearing areas on the town lands, and after protracted negotiations this concern has secured a lease in perpetuity over 1,650 claims (being owners' and discoverer's claims) on the town lands of Schweizer-Reneke, subject to a payment of 10 per cent. of the net profits earned to the Village Board of Schweizer-Reneke. In the event of the town lands being proclaimed a public digging a further large area will accrue to the company. It is understood there has been an idea to proclaim 300 morgen. In this event the Greig Diamonds Company would have the right to a further 4,500 claims. The capital of this company is £16,000 divided into 64,000 shares of a nominal value of 5s. each, and not £60,000 as was stated in the *Government Gazette*. Vendors took 44,000 5s. shares, 8,000 shares fully paid were issued to provide £2,000 of working capital, and 12,000 shares are held in reserve, shareholders having the right to participate *pro rata* to their existing holding in any future issue. The directors of the company are H. J. Filmer (Chairman), Thos. Greig, W. T. Hallimond and Tom Bell.

Geological Features.

Diamondiferous gravel is now being worked on the erven of Schweizer-Reneke on the northern confines of the town. Three or four 4ft. pans are employed, and the returns are reported to be very good. To the north of these erven are the town lands, and to the north of the town lands again is the farm Rietput. The Harts River courses through these properties. On the portion of the town lands now possessed by the Greig Diamonds the presence of diamondiferous gravel has been proved in a large number of prospecting pits and trenches and by actual washing tests. There can be no doubt that the gravels on the erven, on the farm Rietput and on the intervening town lands are one and the same deposit, and that they have a common river-derived source of origin. In general geological and mineralogical features these gravels or washes appear to differ very considerably from the "alluvial" washes found on the farms Mooifontein and London nearer to Bloemhof. Whereas on these two latter farms there are no evidences of fluvialite action it is clear that the Schweizer-Reneke alluvials were brought down by the Harts River and deposited in at least two of its old beds. The diamonds, too, of the Schweizer-Reneke gravels are said to be characteristically different to those of the Mooifontein-London-Bloemhof diggings, so much so that buyers can with ease segregate the stones in a mixed parcel according to their sources of origin. In the Schweizer-Reneke fields, too, amygdaloidal diabase is absent. The present course of the Harts River is through sandstone beds probably of Waterberg age. These beds show remarkably clear and defined stratification and may be seen typically exposed on the northern portion of Rietput workings where they dip at a fairly low angle of inclination towards the north. In places the beds show signs of alteration into quartzite. A feature of these gravels is that the associated minerals are largely quartz, jasper and occasionally a little felspar. The absence of gravels and olivine, and the occurrence of carbons or ilmenite in very small quantities in the wash is a notable feature.

On the northern end of the Rietput workings there is evidence of the convergence of two strong currents, which subsequently divided and flowed in two channels around the quartzitic buttress or "kopje" which now exists in about the centre of the town lands. To the west there rises a small range of sandstones and altered sandstones and to the east the banks of the present course of the Harts. To the north of this point there is, so it is reported, no payable wash. In the workings in Mr. Schmidt's ground, which is a hundred yards or so to the south, finds have been uniformly excellent. The absence of diamonds in the wash of some portions of the old river bed and the occurrence of diamonds in considerable quantities in other portions can be explained by the assumption that in places the course of the river was impeded by topographical barriers. Under such a circumstance the river would naturally deposit much of the gem-bearing detritus borne by it.

High Grade Stones.

Numerous diggers have been working on Rietput since April of last year when prospecting and subsequently washing operations were commenced there. A number of diggers have made good discoveries. The quality of the diamonds throughout has been good, the average price secured being in the neighbourhood of about £8 per carat, a figure which it is understood is better than the average for any other digging in South Africa, with the exception of Sydney on the Vaal River, where the average size of the stones is somewhat larger than on Rietput. The largest stone so far found on Rietput has been one of 19 carats.

Results from the Greig.

The wash or gravel on the Greig Diamonds property varies considerably in thickness in different portions of the property. In one hole 25 feet of wash is showing. The bottom of this hole is filled up with boulders, and we are informed that the total thickness of the wash at this point is 32 feet. In other holes about 7 feet of alluvial are showing; in others the thickness is from 10 to 15 feet. The thickest deposit appears to lie on the higher ground to the west of the present bed of the Harts River. We are informed that in every hole and trench put down on the property diamonds have been found. The official record of diamonds found on the Schweizer-Reneke town lands or Greig Diamonds property, as the result of prospecting operations to date, is as follows:—

	Carats.	Sold for		
January 30	$2\frac{3}{4}$ bort	£1	10	0
February	$41\frac{1}{4}$	187	10	0
March	71	424	5	0
April	$80\frac{1}{4}$	454	5	0*
May	$16\frac{1}{2}$	95	0	0†

* And £68 worth of diamonds on hand.

† "Cleaning up return."

After the end of April no work was done by individual diggers, the property being disposed of to the Greig Diamonds, Ltd. The total selling value of the diamonds found to date has amounted to £1,256. The largest diamonds found during prospecting operations were two stones each weighing $6\frac{3}{4}$ carats. One of these was sold for £11 per carat. The average for the whole parcel works out at £5 14s. per carat and one stone was sold for over £15 per carat. These results appear to have been produced from about 1,200 cubic yards.

Present Policy.

Work at the property is in charge of Mr. Wm. Murray, a gentleman of long and varied experience in South African mining, and particularly in diamond mining. Mr. Murray is cutting a long trench from south to north on the property and has already a few hundred loads ready for transport in trucks along a tram line to the main washing gear. The present policy of the company is to get ground in readiness for washing operations in the vicinity of the main washing plant, and in the meanwhile a small 4-foot pan will be got to work at the south end of the property and practically adjacent to the town lands where good results were being secured when washing operations ceased. This small pan will be the means of further testing this end of the property, and it should also prove a source of revenue to the company. The working of an alluvial diamond field, although it calls for the exercise of none of the finer arts of mining, requires that much experience and sound judgment shall be brought to bear on the matter, especially where the wash itself or the overburden, or both wash and overburden, are of considerable thickness. As already stated, the gravel on the Schweizer-Reneke town lands is, in places, well over 20 feet in thickness and in places, too, the depth of overburden runs to four or five feet. Disposal of overburden and of the large boulders in the wash to the best advantage will need careful consideration. Perhaps at some time in the future the installation of some form of aerial ropeway transportation of ground to the main washing plant will be considered. Such a system has much to be said for it in connection with a proposition of this nature.

An Estimate of the Gravel Contents.

On a basis of 6 feet of wash throughout the 1,650 claims (being the area of owners' and discoverer's claims at present selected) and making an allowance of 75 per cent. for boulders and unwashable ground, the gravel content of the ground works out at 313,242 loads, taking 16 cubic feet of ground to the load. As a matter of fact this estimate is likely to be greatly exceeded in actual practice. In the first place the depth of wash has been placed at a very conservative figure in the above estimate and a further and more important consideration is that on proclamation a further large area equivalent to about 90 morgen will accrue to the company. In the event of no proclamation of the field the Greig Diamonds Company, with the full approval of the Schweizer-Reneke Village Board as being the owners of the commonage, propose to take up the attitude that they are entitled to take up and work three-tenths of the ground prospected by them on the same terms as those at present agreed on, viz., the payment of a 10 per cent. royalty of the net profit to the Schweizer-Reneke Village Board. There is no apparent reason why the costs of working should exceed those of other diamondiferous alluvial fields. Mr. Murray estimates the cost at 1s. 6d. per cubic yard. The proposition appears to possess every prospects of success if worked on sound and businesslike lines.

Plans for Washing.

A site for the preliminary portion of the main washing gear has been selected on the northern portion of the town lands and at a distance of about 120 yards from the Harts River. An 18 h.p. Tangye oil engine has been purchased and is now on the property and either a 10 ft. or a 12 ft. pan will be installed. The power provided by this engine should be ample to drive two large pans with elevators and accessory mechanical gear. The Harts River provides a perennial water supply. A pump will be installed close to the existing ingenious wire rope bridge, and this should give an ample supply throughout the year. In the summer, or rainy season, the river sometimes rises several feet and floods its dry season banks. The management has fully considered this in the selection of a site for the plant, and the general lay-out of the mine. It is anticipated that washing operations at the main plant will commence towards the end of next month or early in November. Native labour is fairly plentiful on the diggings at present, and as the fields are situated near Taungs Native Reserve—an important labour centre—there should be no great difficulty in securing all the boys required. In consequence of the somewhat lesser prices now paid by buyers for diamonds native wages throughout the south-western diggings are being reduced, but this move does not appear to have thus far had any appreciable effect on the complement available.

OIL AND OIL SHALE IN SOUTH AFRICA.

Mr. Craig's Report Expected in a Month— Prospects of an Oil Shale Industry.

The report of Mr. Cunningham Craig, the oil expert, who for a long time was adviser to the Imperial Colonial Office, and whose services were recently engaged by the Union Government to investigate and report on the oil resources of South Africa, is expected in about a month's time. It is an open secret that Mr. Craig was by no means over-impressed with what he saw in this country and that his document will not be particularly enthusiastic on the subject of South Africa's natural oil reservoirs.

A Probable Synopsis.

If confirmation of this were needed, the statements of Mr. Warington Smyth, Secretary for Mines, at the Kimberley meeting of the Associated Chambers of Commerce of South Africa, may be cited in substantiation. Mr. Smyth remarked that Mr. Craig had been through South Africa, and had spent some months upon the work of investigation. He had been taken to the most promising of the occurrences of which the Government had information. He was accompanied by members of the Geological Survey, or by inspectors of mines. Shortly, Mr. Smyth said, he could inform the Congress that the geological conditions of this country appeared to show that the occurrences of oil were small, and that the natural reservoirs, which were largely caused by igneous dykes, were so numerous that the distillation had been in small quantities. He was afraid it would be found that probably these natural reservoirs of oil were smaller than could economically be worked. Mr. Smyth was, however, able to hold out a few crumbs of comfort in regard to coal and oil shales. Observations, he went on, had shown the continuance of the coal measures in the north-west of Natal, and those coal or oil shales had a wide distribution. On the other hand, he was afraid that probably it would be found they were rather poor, and if it were possible to work them on a large scale it might be that they would be payable propositions. It was too soon to say what would be the result of the development of those oil shales.

The Oil Shales.

We are given to understand that Mr. Craig formed a much more hopeful opinion of the possibilities of the establishment of an oil shale industry in this country than he did of the natural oil. From reliable sources we gather that indications of the existence of oil shale in various parts of South Africa are not lacking, and it may be recollected that about a year ago a syndicate was formed to exploit shale in the Ermelo district. We are rather curious as to what has happened to this syndicate, for of late nothing has been heard of it. Since, however, oil shale looms fairly large in the public mind at present it should be of interest to recall certain analyses made on behalf of this concern—the Transvaal Oil Shale Syndicate, Ltd. The results of an analysis of the shale by Dr. Norman, of the City Central Laboratory, are worthy of note. They are:—An average of 30·1 gallons of oil per ton, giving distillation products as follows: Petroleum spirit 5 per cent., burning oils 36 per cent., lubricating oils 38 per cent., and pitch 21 per cent. An investigation of the crude oil for paraffin wax gave 6 lbs. 13 ozs. per ton of shale. The possible yield of sulphate of ammonia was ascertained to be very high, amounting to 64 lbs. 15 ozs. per ton of shale. The flash point of the burning oil was 119 degrees Fahr., and the combined sulphur being small in quantity, was considered to be capable of easy elimination. These analyses were of samples, of course, but it is authoritatively stated that the supply of oil shale of good quality in the Ermelo district is in areas of sufficient size to be profitably worked on a fairly large scale. The future of the shale oil industry in this country depends, of course, to a large degree, upon the local market, and in this respect the chairman of the syndicate, Mr. Alfred Thomas Mercer, remarked: "As a pioneer company we have, of course, great difficulties in front of us, and your directors do not seek in any way to minimise those difficulties, but we have also the great advantage that our products are badly wanted in the Transvaal and South Africa. We have, then, an ideal market, while, so far as I am aware, we do not run up against any possible competitor. For example, for sulphate of ammonia, in which our shale is so rich, there should be an unlimited market. It is a product which should be of the greatest importance to the agricultural development of the country, which the Union Government is doing so much to foster." In this connection it may be pointed out that during the seven months ended July 31st last year, there were imported into the Union lubricating oils to the value of £80,779, mineral oils (not paraffin) to the value of £35,631, and paraffin to the value of £177,187, a total of £292,597. Tar and pitch to the extent of £14,127 was also imported, and paraffin wax and stearine to the value of £107,717. If products of this kind, amounting in value to over £400,000, are handled in little more than half a year, it is clear that the field for establishing local works and manufactories in the country where the raw materials are available is a particularly promising one. The question of working cost is naturally an all-important matter, but as we remarked a year ago, more important than all appears to be the inaugurating of ventures of this kind on a sound basis of ample working capital.

THE IMPROVING PROSPECTS OF SWAZILAND TIN, LIMITED.

Excellent Results Follow Completion of New Scheme—Record Profits Earned.

THE operations of the Swaziland Tin Company for the financial year ended 30th June, 1913, resulted in a working profit for the year of £24,729, as against £9,040 for the previous year. During the first six months (dry season) the profit averaged £1,265 per month, whilst for the last six months of the year (wet season) it averaged £2,856 per month. 408,349 cubic yards, or an average of 34,029 cubic yards per month, have been treated, showing an average yield of 1·833 lbs. of concentrates, or 1·314 lbs. of metallic tin per cubic yard, the average value being 2s. 2·214d. per cubic yard, the average costs 11·681d. per cubic yard, and the average profit 1s. 2·533d. per cubic yard. In the course the average profit 1s. 2·533d. per cubic yard.

In the course of his annual report, the Consulting Engineer, Mr J. J. Garrard, writes:—The scheme outlined in my last annual report for installing gravel pumps to replace hydraulic elevators on King's Flat and on the Mbabane Flats has been completed, and the new plant commenced working in July. A delay of about five months was occasioned owing to the late delivery of a portion of the electrical plant. The method of working these pumps -three in number (8 inch) is as follows: The pontoon carrying the gravel pump rests on the bedrock of a paddock. All the high pressure water available, the bulk of which formerly was used to elevate the gravel in hydraulic elevators, is now used in monitors to break down the gravel banks of the paddock. This gravel and water passes along a race in the bedrock to a sump close to the pontoon, into which the suction pipe of the gravel pump is placed. The gravel and water are then lifted by the electrically-driven gravel pump, through a delivery pipe, to sluice boxes (the first portion of which being usually on a trestle) placed above the level of the top of the bank. The tin concentrate is removed in the usual way from the sluice boxes. When the faces of the paddock advance and become too far for the gravel to gravitate to the sump, water is allowed to rise in the paddock, and the pontoon is floated to a new position, the water pumped out, and work resumed as before. After use on the gravel pumps at King's Flats and Mbabane Flats, as detailed above, the water which formerly ran to waste over the Mbabane Falls is now intercepted at the top of the Falls and utilised to generate electric power to drive the gravel pumps. It is led along a race to the head box of a pipe line, through which it passes under a head of 550 feet to a Pelton wheel direct-coupled to a 3-phase generator, the power from which, after being transformed from 500 to 3,000 volts, is transmitted through an aluminium power line to stepdown transformers on the pontoons carrying the gravel pumps, from which transformers the current passes to induction motors direct-coupled to the pumps. The total capital expenditure on this scheme, which was virtually completed at 30th June, has been approximately £6,800. The water, after driving the Pelton wheel at the power station, is again intercepted and passes through a race some four miles to the workings at Stable Creek, where it is again used in breaking ground and in elevating gravel by means of hydraulic elevators. Very full use is thus made of all available water. Still further improvements are contemplated in the method of working at Stable Creek, as, for instance, by increasing the working head of the water by means of a long pipe line, and substituting gravel pumps for hydraulic elevators; but as the capital expenditure involved will be considerable it is not proposed to carry out these further improvements before the beginning of 1914. A new scheme is now being carried out to utilise the balance of the power available at the generating station at one of the Hill Creeks, known as Gray's Creek, which carries good tin, but which is situated at such an altitude as to preclude the possibilty of leading water to it under a natural head. There is a small quantity of water running in the creek itself, which is, however, not sufficient to be of any real use in sluicing. Only a very little hand-sluicing has, therefore, ever been done in this creek. Here a power line is being constructed from the power station to the lower end of the creek, where a dam is being placed. A pressure nozzle pump, driven by a motor, is being installed, which will take its suction from this dam, and deliver a large amount of water under pressure through pipes to two monitors which will wash away the gravel, working gradually up the creek. This gravel and water will gravitate down through bedrock races to sluice boxes, where the tin will be removed, the tailings and water passing on down to the dam where the water will settle for use over and over again, the water in the creek itself being utilised for make-up water. As the dam gradually fills up with tailings, these will be sluiced out. The cost of this scheme is estimated at approximately £3,000, and the method of working outlined above is nearly identical with that adopted at the Groenfontein Tin Mine, where a similar plant has been in successful operation for about two years. At Grey's Creek, however, there is the advantage of hydro-electric power, and the local supply of make-up water in the creek itself, whereas at Groenfontein the power has to be generated by gas engine, and the make-up water pumped nearly five miles against a head of about 1,200 feet. When Gray's Creek becomes worked out, this plant—by extending the power line—will be available for use on the small but rich upper hill creeks, which it is impossible to work economically at present. It is anticipated that the installation of the three gravel pumps and the nozzle pump will most favourably affect the output of concentrates for the current year, and in the future, as even in a dry season like that of last year, one or two gravel pumps would always be working up to full capacity, whilst the number of cubic yards treated would in any case be vastly more than was possible under the old system. During the wet season, on the other hand, with a superabundance of water, it should be possible to run elevators side by side with the gravel pumps, and so still further increase the quantity of ground treated. As bearing out the statement made in my last annual report that hydraulic elevators require for their operation over 60 per cent. of the total available water, I have had careful statistics kept, extending over a period of twelve months, of the working of the four hydraulic elevators in use, and find that the elevators actually took for their operation on the average 73 per cent. of the total available water, leaving only 27 per cent. for useful work in breaking ground by monitors. (The best monthly performance of any one elevator showed 60 per cent. elevator water to 40 per cent. monitor water, and the worst 84 per cent. elevator water to 16 per cent. monitor water). Moreover, all the best high pressure water had to be used on the elevators to obtain the necessary lift. This means, therefore, that by the setting free of this elevator water at King's Flat and Mbabane Flats, and elevating the gravel by means of gravel pumps, there will be nearly four times as much water available for use in monitors breaking ground. Furthermore, as this water will be under a high pressure, it will be capable of more efficient work. Prospecting the flats ahead of sluicing operations has been carried on systematically throughout the year by means of the Empire drill. Altogether, 1,235 boreholes, having a total footage of 15,851 feet, have been put down. The results from the profitable sections so far located by boring are as follows: Stable Creek, 143,433 cubic yards, average 1·61 lbs. metallic tin per cubic yard; Mbabane Flats, 1,591.027 cubic yards, averaging 1·51 lbs. metallic tin per cubic yard; King's Flat, 223,591 cubic yards, averaging 1·67 lbs. metallic tin per cubic yard. This makes a total of 1,958,051 cubic yards of profitable ground proved by boreholes ahead of present working faces, showing the satisfactory average value of 1·53 lbs. of metallic tin per cubic yard. It is estimated that the portions of the concessions at present being worked contain over 10,000,000 cubic yards of tin-bearing ground ahead of, and in addition to, that already proved as above. The work of proving this additional ground is in hand. The above estimates only refer to that section of the company's concessions at present being worked. The remaining portions of the concessions are to a great extent unexplored, although tin is known to exist in a number of places. Another Empire drill has been purchased to enable the prospecting of this unexplored ground to be more rapidly carried out.

Rietfontein (T.C.L.), Ltd.

The Consulting Engineer's report for the year ended 30th June, 1913, states that the total amount of driving, sinking crosscutting and open cutting up to 30th June, 1913 is 11,581 feet, of which 1,659 feet were done during the year. The tonnage standing developed in the mine at 30th June was 7,397 tons, of an average value of 16·14 dwts. per ton, over an average width of 38 inches, as against 10,752 tons of an average value of 13·7 dwts. over 36 inches at 30th June, 1912. Development was suspended for some months pending the results obtained from extraction experiments on ore from the lower portion of the mine, which had been found to be refractory, but is now being actively pushed ahead, as the extraction experiments showed that a considerable portion of this ore could be profitably worked. The second level south was driven 533 feet in barren reef until it encountered the pay shoot, since when 170 feet were driven in the shoot up to 30th June, showing the satisfactory average value of 14 dwts. over 38 inches, the level being still in the pay shoot at the present date. An incline is now being sunk to open up the third level in the main pay shoot. The tonnage mined during the year was 11,578 tons, of which 11,548 tons, of an average value of 9·05 dwts. per ton, were milled, leaving 30 tons in bin. The gold recovered was 4,111·858 fine ozs., or 7·121 dwts. per ton milled, which represents a total recovery of 78·68 per cent. The difference between the quantity of fine ozs. of gold recovered as above, and that shown in the tabulated monthly reports, is due to discrepancies between mine assays and the results obtained on realisation. Considerable difficulties have been encountered in the recovery of the gold from this ore, chiefly owing to the presence of copper, but constant attention is being directed by our metallurgist towards attaining improved results. The management is in the hands of Mr. G. C. Damant, the manager of Glynn's Lydenburg, Ltd., Mr. B. I. Campbell being appointed as resident sub-manager in March last.

Mines Department Exams.

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A RECORD YEAR WITH THE NEW MODDER.

Increased Profit from Higher Yield Despite Reduction in Tonnage Crushed.

THE New Modder report for the year ended June 30, 1913, has been issued. The main features of the year's work at the New Modder, as compared with the previous two years, are as follows:—

	Year ending 30th June, 1911.	Year ending 30th June, 1912.	Year ending 30th June, 1913.
Tons milled	538,400	585,900	565,400
Yield per ton milled	29s. 5d.	34s. 6d.	39s. 7d.
Costs per ton milled	17s. 4d.	18s. 8d.	19s. 11d.
Profit declared, including profit from Accumulations ...	£328,545	£468,788	£559,243
Net payable ore reserves, tons	3,341,830	3,900,000	4,351,000

Included in the profits is an amount of £3,158 earned from the treatment of accumulated slimes, all of which have now been treated. The tons milled for the year under review show a falling off of 20,500 tons, as compared with the previous year, but the profit has increased by £90,455. According to the annual report of the consulting engineer, Mr. H. Stuart Martin, the increase in profit is due to the higher grade of ore mined, and the chief factor that contributed to the falling off in the tonnage mined and milled was the fluctuating native labour supply. The complement varied from 2,800 to 4,700 natives, a supply of native labour at one time in excess of and at another below requirements. These extremes naturally have had a very disorganising effect on the regular working of the mine and on the cost of production. The Native Recruiting Corporation, which came into existence during the latter part of 1912, will, it is hoped, in time be able to maintain a more regular supply. In June of this year a loss of approximately 10,000 tons, or £8,000 profit, was caused by the miners' strike. The staff loyally carried on the work of the mine for ten days, which minimised the loss, until the general strike was declared. Working costs increased 1s. 3d. per ton as compared with the previous financial year, owing to the inclusion in working expenditure of certain extraordinary items in connection with the remodelling of the system of working the mine. The development footage decreased by 5,568 feet, but the amount of dead work increased by no less than 237,000 cubic feet. This is part of the programme which has been steadily pursued, namely, to pave the way for working the mine in the future upon a more economical basis, having regard to the extent of the property, and the future prospects. The following table shows the position of the ore reserves as at June 30th, 1913:—

		Value.		
	Tons.	Dwts.	s.	d.
Main Reef	4,424,000	8·2	34	5
South Reef	123,000	5·9	24	9
	4,547,000	8·1	34	0

The stoping widths on which the above figures are based are 62 inches for the Main Reef and 58 inches for the South Reef. Practically the whole of the block ore is immediately available for stoping. The slight increase in value may be attributed to the satisfactory nature of the development exposures during the year, and is the more satisfactory in that during the period when native labour was scarce stoping had of necessity to be concentrated in the richer section of the mine. In addition to the above, there are developed 456,000 tons, averaging in value 3·8 dwts., made up of blocks varying in value between 3·5 dwts. and 4·3 dwts. The new circular shaft was sunk to its final depth of 2,258 feet, and walled throughout. The reef was struck in the shaft at a depth of 2,158 feet on October 29th, and, including waste partings, averaged in value 13·2 dwts. over 48·4 inches. Since that date, stations Nos. 1 and 2 have been cut, and at No. 1 station a crosscut north has been driven 490 feet, reef having a value of 9·5 dwts. over 50 inches being encountered 252 feet from the shaft, and at No. 2 station a crosscut south struck the reef 120 feet from the shaft, but owing to faulting no reliable values can be obtained. The prospects indicate good values in the southern area of the property, and every effort will be made for the expeditious development of ore in the neighbourhood of the circular shaft. Given a fair supply of native labour, a large area of ground can be blocked out here in a comparatively short period, and the knowledge of values thus gained will determine whether crushing on a larger scale by the erection of a mill and treatment plant at the circular shaft will be warranted. The important work of connecting the circular shaft and No. 12 shaft is being pushed with all possible speed. The recent unrest amongst the miners has had a disturbing effect on the native mind and large numbers of boys have left the property. Every endeavour has been made to work the mine in the most advantageous manner possible in the circumstances. Work in the western section has been temporarily stopped, and all available forces have been concentrated in the most suitable working places. It will be impracticable for the time being to mine to the average grade of the ore reserves, but, in view of the extent of the area which is being worked, the matter is of no consequence. The mill tonnage will remain abnormal until the supply of native labour shows a marked improvement. Generally speaking, the mining operations of the past year have been most successful, the profit earned being £559,243, as compared with £468,788 in the previous year, and the net payable ore reserves have been increased by 451,000 tons.

The Position of Rand Klip.

At the 30th June, the Rand Klip had in hand cash to the amount of £12,000; and the directors, in their annual report, state that every effort is being made to curtail expenditure. The consulting engineer, Mr. E. J. Way, in his report, says *inter alia*:—During the year 6,115 feet 6 inches of development were accomplished, and of this footage 4,395 feet were sampled, giving an average value of 4·62 dwts. over 21 inches. The payable portion of the footage sampled amounted to 640 feet, of an average value of 11·2 dwts. over 24 inches. The values encountered on the 3rd (lowest) level of the mine showed a considerable improvement on the results from the upper levels, the 235 feet sampled giving an average assay value of 8·4 dwts. over 27·4 inches. All development work was suspended on the 31st March, 1913, and all plant liable to damage was removed from the mine. Total area prospected to the date of closing down amounted to some 20 claims, or approximately 2 per cent. of the mynpacht to which your company would be entitled on proclamation of the farm. Similar low grade areas, alternating with highly payable zones, have been disclosed on adjoining properties, and I do not consider that the work done to date on your holding has been in any way sufficient to indicate the value of your property. In view of the results obtained by neighbouring companies, and the values disclosed on the lowest level of your mine, it is to be regretted that financial considerations should have necessitated the cessation of development operations.

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POSITION AND PROSPECTS OF THE NOURSE MINES.

Increased Profits from Lower Costs—Falling Off in Ore Reserves—New Concentration Scheme Nearly Ready

In view of the termination of the financial year having been altered, since the presentation of the last report, from the 31st July to the 30th June, the operations of the Nourse Mines for the year ending June 30 have been restricted to the work done in eleven months. The ore milled was 577,700 tons as compared with 609,250 tons for the previous year, but on the other hand the profit derived from current ore treatment, namely, £254,731 shows an appreciable increase of over £10,000. The improvement in profit is equivalent to 10d. per ton milled, and is attributable to a reduction in the cost of working, for while the yield at 30s. 2d. reveals a slight decrease of 4d. per ton, the working costs at 21s. 4d. represent a reduction of 1s. 2d. per ton. From the treatment of accumulated slimes a profit of £5,777 was obtained, as against £8,590 for the previous year. The supply of accumulated slimes has been limited and became exhausted at the end of May. Including the profit from the treatment of accumulations, the total profit realised was £260,508, as compared with £253,233 for the preceding financial year.

The Consulting Engineer, Mr. B Madew, in the course of his report, writes: Development operations in the South Nourse have disclosed reef of lower value than was obtained in the upper levels of the mine, but it is reasonable to expect that the reduced grade will be met by reduced costs as the result of more economic conditions to be brought about by the concentration scheme now in hand. An energetic development programme was maintained throughout the period; the total footage accomplished was 27.805 feet, an increase of 1,437 feet over the previous year, but in spite of every effort, owing to the extremely broken nature of the reef and the amount of dead work to be accomplished, the payable ore developed amounted to 512,700 tons, a tonnage not sufficient to maintain the ore reserve position. The payable ore reserves at 30th June, 1913, were estimated as follows:—Main Reef, 506,000 tons; value 5·7 dwts—23s. 11d. Main Reef Leader, 495.400 tons; value, 6·8 dwts—28s. 7d. South Reef, 794,200 tons; value, 7·1 dwts—29s. 10d. Total, 1,795.600 tons; value, 6·6 dwts—27s. 9d. The above ore reserves may be classified as below:—(1) Ore fully blocked out for stoping, 1,421,200 tons; value 6·7 dwts.—28s. 2d. (2) Ore valued, which will be rendered available for stoping by current development, 236,700 tons; value, 5·7 dwts—23s. 11d. (3) Ore contained in shaft pillars, and therefore unavailable for stoping at present, 137,700 tons; value, 7·1 dwts.—29s. 10d. Total, 1,795.600 tons; value, 6·6 dwts.—27s. 9d. The above tonnages are based on stoping widths of 64 inches for the Main Reef, 45 inches for the Main Reef Leader, and 49 inches for the South Reef. In addition to the above ore reserves, there are developed 622,000 tons of an average value of 4·0 dwts. made up of blocks between 3·5 and 4·7 dwts. At the end of the previous year the tonnage made up of similar blocks was 500.000 tons. It is hoped that a considerable portion of this tonnage will in time be profitably worked. On comparnig the payable ore reserves with those of last year, they show a decrease of 173,400 tons, while the value remains the same; the decrease is mainly attributable to the Main Reef, which accounts for 122.700 tons of the reduction, the diminution in the Main Reef Leader and South Reef tonnages not being of significance. The deficit in the Main Reef reserves may be put down to the fact that certain low grade blocks, which have hitherto been found to be payable, have on the present valuation averaged unpayable, owing to a falling off in the value of the stope faces. It will be observed that the average grade of the payable Main Reef reserves has improved by ·3 dwt. per ton. Satisfactory progress has been made with the underground concentration scheme referred to in my last report. The surface work is now complete, and the scheme will be gradually brought into operation in the near future. At the moment of writing, the labour position is seriously affected owing to recent disturbances, but there are prospects of the position being relieved, when the mine will be in a satisfactory position. The plant and underground workings are in good order.

The Manager, Mr. R. A. Barry, in the course of his report, writes: The average current working costs for the eleven months ending June 30th, 1913, were 21s. 4d. as against 22s. 6d. for the preceding year, or a drop of 1s. 2d. per ton milled, whilst the working profit was 8s. 10d. per ton milled, as against 8s. for the previous year. Accumulated slimes yielded an additional profit of £5,777, bringing the total working profit for the eleven months to £260,508, as compared with £253,233 for the previous year. The accumulated slimes have now been entirely worked out. The complete electrification of our plant still remains in abeyance, owing to the shortage of supply of current from the Power Company. We are thus in the unfortunate position of having to maintain both steam and electrical power plants, and though we are taking all the compressed air which the Power Company can supply, we still have to keep practically the whole of our own compressed air plant in commission. The west incline shaft was deepened a further 471 feet, and is being pushed ahead with all speed to connect with the 20th level drive from the South Nourse No. 2 vertical, which we hope to accomplish by the end of October next, and will materially improve working conditions in the lower levels of our western mine. Development from this shaft has been pushed on with all possible speed. The ore reserves in the upper levels of the western section are fast becoming depleted, and the grade of ore developed by the new lower levels is generally lower in value, and contains a larger percentage of unpayable rock. The South Reef in the central shaft section is very nearly entirely worked out, but a good deal of scattered and somewhat erratic Main Reef Leader still remains, with a considerable tonnage of payable Main Reef still to be stoped. The development in the deep section west of No. 2 shaft down to the plane of the 20th level is practically complete, except for boxholes and raises. After passing through a zone of most discouraging reef, good values were again picked up on the west of this section towards the South Goch dyke. Development in the deep section east of No. 2 shaft is practically complete down to the plane of the 20th level, and large areas of good reef have been opened up. No. 4 incline shaft has been sunk a further 167 feet, bringing it to a total depth of 247 feet or 10 feet below the 20th level. This shaft is necessary to open up the reef above the South Goch dyke, and below the 20th level, and will now be pushed with all speed. A good deal of work has been done in the east incline shaft to bring this shaft into commission down to the 20th level, at which level we hope shortly to connect with the drive from No. 2 incline, and thus enable us to send all our ore from this section of the mine to the South Nourse shaft. Development east of the east incline has opened up high grade South Reef, but has disclosed very broken ground, necessitating a serious amount of dead work before the reef can be developed. South Nourse incline shaft has been sunk a further 312 feet, bringing its total depth to 344 feet, or 61 feet below the 21st level. This is a large, five-compartment shaft, and most excellent work has been done here. Values disclosed by the development from this shaft have given us a good area of payable Main Reef, but the small amount of Main Reef Leader as yet opened up has proved unpayable, and, whilst some payable South Reef has been obtained, insufficient work has as yet been done to give any reliable indication with regard to this reef. Good progress has been made with the underground concentration scheme. In the near future the western section of the mine should connect with the main South Nourse haulage shaft, whilst our drive from the east incline shaft, to connect with this same main haulage shaft, is also on the point of connecting. The work of installing a mechanical haulage to convey rock from the east incline to the main South Nourse haulage shaft is in hand, and largely completed, so that as soon as the necessary connection is made we will be able to mechanically convey ore from our eastern workings with far less handling than is to-day possible. The motor and machinery have been installed and the permanent track laid, so far as development to-day permits. The work is complete on the surface and merely awaits being put into commission. The South Nourse main hoisting shaft headgear has been thoroughly overhauled and strengthened up. Ore bins have been installed and the railway sidings connecting both mills to this shaft have been laid. One locomotive and four 40-ton steel hopper trucks have been purchased and are on the siding. New skips have been installed in this shaft and a change-gear to enable us to use capacious man cages is now nearly ready for use. The air underground is most excellent, and, thanks to the continued operation of our excellent water system throughout the mine, the dust nuisance has been kept well in hand. This, with the systematic control of blasting hours throughout the mine, has rendered the underground working conditions very good. The average labour employed on the mine during the year was 643 whites and 4,662 natives per month, as against 663 whites and 4,855 natives for the preceding year. Health conditions have, on the whole, been good. The general outlook of the mine has not materially altered. Values, on the whole, remain at about the same level, whilst the outstanding feature of the mine—its extremely disturbed and broken condition—remains the same.

Roberts Victor Diamonds.

The board of directors of this company have declared an interim dividend at the rate of 10 per cent. per annum, payable to all shareholders registered on the books of the company on 30th September, 1913. The transfer books will be closed from October 1st to October 7th inclusive.

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A YEAR WITH THE SOUTH AFRICAN RAILWAYS.

Points from General Manager's Report—Increase in Passenger and Decrease in Goods Traffic—New Lines—Progress of S.A. Products.

THE report of the General Manager of the South African Railways and Harbours for the year ended December 31, 1912, has been issued. Notwithstanding the severe drought from which a large portion of the interior suffered during the period under review, Mr. Hoy is again able to report a substantial increase in the number of passengers and tonnage of goods carried. In consequence of the large reductions in fares, the passenger receipts have continued to advance, although not in the same proportion as the number of travellers, so that it is necessary to compare an increase of over four millions (11·5 per cent.) in the number of journeys, with an increase of 7·47 per cent. in the earnings. The goods receipts have been more seriously affected by the very substantial rate reductions and the constant displacement of oversea import trade by that of South African production. The revenue-earning tonnage carried increased by 6 per cent., but the earnings decreased by approximately 1 per cent. The increased traffic was well distributed all over the Union, but it is particularly gratifying to be able to refer to the general prosperity which is evident in the Western Province (Cape). The grain, fruit and wine farms are in a prosperous condition, and irrigation and cultivation are progressing rapidly, whilst the beauties of the Cape Peninsula are attracting a larger number of visitors.

LINES NEW AND OLD.

The open mileage of Government lines at December 31, 1912, was 7,848 miles, comprising 7,382½ miles of 3 ft. 6 in. gauge and 465½ miles of 2 ft. gauge, the increase during the 12 months (after deducting 8¼ miles of line closed down) being 301½ miles, or approximately 4 per cent., consisting of 276¾ miles of 3 ft. 6 in. gauge and 24¾ miles of 2 ft. gauge. The mileage of new lines opened for traffic during the year was made up as follows:—Cape Province, 102 miles; Free State, 29 miles; Transvaal, 177 miles. There are 630¾ miles of new line under construction: Cape Province, 185½; Free State, 74; Transvaal, 266¼; and Natal, 105¼. The construction of the new lines of railway was authorised during the recent session of the Union Parliament as follows: Cape Province, 306¼ miles; Transvaal, 191 miles; Orange Free State, 166½ miles; Natal, 130¾ miles; total, 794½ miles. When all lines under construction at present and authorised are completed, the open mileage of the South African Railways—including the Verulam-Tugela section of 50 miles and the 43 miles of line between Grahamstown and Port Alfred, the latter of which was purchased since the conclusion of the period covered by this report—will amount to approximately 9,318 miles, consisting of 8,757 miles of 3 ft. 6 in. gauge and 561 miles of 2 ft. gauge. The increase in train mileage was 2,651,993 (or 10·30 per cent.) and in train and engine mileage 3,349,821 (or 10·21 per cent.).

£ S. D. OF 1912.

The capital expenditure of the railways during the year amounted to £1,900,672, the total at the end of the year being £81,272,325, made up as follows:—Open lines, £79,371,503; lines under construction, £1,448,190; subsidies paid to privately-owned lines, £452,632; total, £81,272,325. The average cost, including rolling stock equipment, for open lines owned by the Administration on December 31 last was £10,113 per mile. Financial results: The following statement shows in summarised form the results of working the railways (as distinct from harbours) for the year under review and the preceding two years, gross figures being given:

	1912.	1911.	1910.
Earnings	£12,247,027	£12,104,769	£12,157,738
Expenditure ...	7,873,344	7,217,070	6,662,890
Surplus ...	£4,373,683	£4,887,699	£5,494,848

As compared with the previous year there was an increase in 1912 of £142,258, or 1·17 per cent. in the earnings, and an increase of £656,274, or 9·09 per cent. in the expenditure. The principal fluctuations in the earnings under the various heads during the year 1912, as compared with the year 1911, were as follows:—Increases: Passengers, £230,047; parcels, £20,145. Decreases: Goods and minerals, £32,723; coal, £45,060; livestock, £509; other traffic receipts, £22,229; miscellaneous, £7,413.

PASSENGERS AND GOODS.

The most striking feature of the results of working has been the extraordinary increase in the passenger earnings year by year since Union, notwithstanding the very substantial reduction in fares, namely: 1910 over 1909, £310,150, or 12·39 per cent. increase; 1911 over 1910, £265,723, or 9·45 per cent. increase; 1912 over 1911, £230,047, or 7·47 per cent. increase; 1912 over 1909, £805,920, or 32·21 per cent. increase. It should not be overlocked, however, that the earnings of the additional amount shown has involved an increase of 35 per cent. since 1909 in the passenger train miles run. The increase in the parcels revenue has justified the considerable reductions in the rates, especially in the inter-provincial traffic. The decrease of £77,783 in the earnings on goods and mineral traffic must be compared with an increase of 667,523 tons, or 6 per cent., in tonnage of coal and other goods and mineral traffic carried for the public, so that the loss in the aggregate receipts is not due to any decrease in traffic, but rather, as already stated, to the reductions in rates and the increasing proportion of low-rated South African products carried. The reduced earnings under the head "Other traffic receipts" is due entirely to the reduction by £22,500 per annum of the charges made to the Postal Department for the conveyance of mails.

EXPENDITURE: HARBOURS DEFICIT.

The expenditure may be summarised as follows:—

	1912.	1911.
Ordinary working expenditure ...	£6,555,202	£6,116,344
Relaying, strengthening, etc. ...	218,227	87,070
Contributions to Renewals Fund	1,099,915	1,013,656
	£7,873,344	£7,217,070

The ordinary working expenditure, therefore, exclusive of the contributions to renewals fund and the special expenditure on relaying, strengthening, etc., increased by £438,858, or 7·17 per cent. This should be compared with the following increases:—Average open mileage worked, 348 miles, or 4·8 per cent.; train and engine mileage, 3,349,891 miles, or 10·2 per cent.; passenger journeys, 4,284,794, or 11·5 per cent.; tonnage handled (public and railway stores traffic), 1,040,607 tons, or 8·1 per cent.; ton miles (public and railway stores traffic), 354,767,772, or 15·1 per cent. The ratio of expenditure to earnings was as follows:—

	1912. Per cent.	1911. Per cent.
Exclusive of relaying, strengthening and renewals	53·52	50·53
Exclusive of renewals only	55·31	51·25
Total expenditure	64·29	59·62

Mr. Hoy points out that as the period covered by the report does not correspond with the financial year, the following figures, in so far as they reflect the operations on the net revenue account, must be taken as approximate only:—Surplus of earnings over working expenditure and renewals, £4,373,683; add interest on investments and miscellaneous earnings, £161,687; total, £4,535,370. Deduct interest on capital, £2,605,970, charges in respect of loans issued.

£13,500; miscellaneous expenditure, £38,696; net loss on subsidiary services, £11,110; total, £2,699,276; balance, being net profit carried to revenue distribution account, £1,866,094. Of the net profit of £1,866,094, the sum of £239,915 was required to meet the net loss on harbours, while of the remaining sum, £587,500 was contributed to the betterment fund, £70,000 to the rates equalisation fund, and £417,677 to the consolidated revenue fund, leaving a balance of £551,002.

THE COAL TRAFFIC.

Since the year 1909 the total output of coal has increased by 1,909,856 tons, equal to 31·7 per cent., or, expressed in another way, the output of the coal mines of South Africa during the three years immediately subsequent to Union has increased by 6,216,697 tons, or 38·8 per cent., as compared with the output during the three years prior to Union. As the tonnage of public coal consigned to the Witwatersrand from the colliery districts was 3,034,544, as against 3,020,107 tons in 1911, it will be seen that the decreases expected in some quarters in consequence of the substitution of electric for steam power on a number of mines has not yet materialised. The total tonnage of coal for export and bunkering carried at the export coal rate was 2,092,496 tons, as compared with 1,935,913 tons in 1911, an increase of 156,583 tons, or 8·1 per cent. Notwithstanding the large increase in the engine and truck supply, the greatest difficulty has been experienced at times in meeting the demands of the collieries. At the majority of the Transvaal coal mines there are no storage bins (as at many mines in Natal); while the majority of the gold mines possess storage capacity for only two days' supply of coal. With no less than 4,600,191 tons of coal forwarded from the Transvaal collieries during the year, the unbounded confidence displayed by both gold and coal mines in the ability of the Administration to provide for uninterrupted transport will be appreciated; but Mr. Hoy could not help expressing the opinion that if the mines would do a little more to assist themselves by the provision of storage accommodation it would facilitate matters considerably.

SOUTH AFRICAN PRODUCTS.

The most satisfactory feature of the traffic returns is the large increase in the tonnage of South African produce and other commodities of South African origin, in striking contrast in many instances to substantial decreases in the corresponding imported traffic. The actual quantity of maize despatched to overseas markets was less than the previous year. This was due to the continued increasing consumption of maize internally, caused by demands from more distant parts of the Union, which was consequent upon the introduction last year of a maximum local rate of 20s. per ton, and to the shortfall in crops in Rhodesia and Portuguese territories, 249,630 bags of Union-produced maize having been despatched into these territories during 1912. The drought experienced in maize-growing centres affected to a large extent the total yield. Decreases are shown in the tonnage of traffic forwarded from the ports to Transvaal and Free State stations, and similar decreases appear in the tonnage of commercial sea-borne traffic consigned from the ports to the Transvaal competitive zone. This constant displacement of the remunerative port traffic seriously affects the railway receipts, and is a factor which should not be lost sight of in making rate reductions.

As foreshadowed in Parliament, important alterations were made in railway rates in the months of August and October, involving an estimated surrender of revenue to the extent of £750,000 per annum. The total reductions in rates and fares made since Union are as follow:—Passenger fares, £149,000; parcels, £16,000; goods and vehicles, £1,076,500; livestock, £45,000; private sidings charges, £50,000; total, £1,336,500. Besides the general reductions mentioned above, casual reductions in rates are being made continually, and it is estimated that since Union these alone have amounted to approximately £50,000 per annum.

Fairview (T.C.L.), Ltd.

The Consulting Engineer's report for the year ended 30th June, 1913, states that the total development footage as at 30th June, 1913, is 5,647 feet, of which 595 feet were done during the year. The tonnage developed during the year has been 5,000; the total developed tonnage at 30th June, 1913, being 24,500 tons, of an average value of 12·5 dwts. over 36 inches. The tonnage milled from the date of starting up on 20th October, 1912, to 30th June, 1913, amounted to 9,125 tons, yielding 3,625·915 ozs. fine gold, equivalent to a recovery of 7·9 dwts. per ton milled. 5,818 tons were taken from ore reserves and 3,307 tons from current development dumps, etc. As the manager points out, some portions of the Stable Reef have been proved to be profitable, and ore has actually been drawn from it, but the extent of development work in connection with this reef is not yet sufficient to enable an estimate to be made as regards tonnage and value. The working profit for this period was £2,834 0s. 2d. Owing to the physical nature of the ore, as explained in the manager's report, considerable additions to the original plant were found necessary, and, as these additions were not completed by the end of the financial year, the tonnage milled had in the meantime to be restricted in order to minimise undue loss in the residues, whilst the actual recovery was also necessarily affected, being only 68·8 per cent. It is anticipated that with the new additions these troubles will be removed, and that both the tonnage milled and the percentage of recovery will become normal as from the beginning of September.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME

His Majesty's Theatre—Wheeler Edwardes Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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PROGRESS AT THE SIMMER AND JACK PROPRIETARY.

Points from Superintending Engineer's Annual Report—The Question of Grade and Ore Reserves.

ARVANCE copies of the annual report of the Simmer and Jack for the year ended June 30th reached us this week. The Superintending Engineer, Mr. C. D. Leslie, writes as follows: The fully developed payable ore reserve at 30th June, 1912, was estimated at 2,680,000 milling tons, of an average mill value of [illegible] dwts. per ton, and, in addition, there were some 438,000 mill tons of partially developed ore of an indicated value of 5·3 dwts. These figures expressed on a mining basis are equivalent to 3,033,000 fully developed mine tons of an average mine value of 5·57 dwts., and 495,000 tons of partially developed ore of an indicated grade of 4·78 dwts. The fully developed payable ore reserve at 30th June, 1913, is estimated at 2,524,000 mine tons of an average mine grade of 5·4 dwts., and 406,000 mine tons of partially developed ore of an indicated grade of 4·7 dwts. Besides this reserve, there is still a considerable tonnage available for stoping from the upper levels and from foot and hanging walls of old stopes, which will be credited to the reserve as the ore is mined. The south-western area of your mine will be developed from No. 2 deep level auxiliary incline shaft, which already has been advanced a distance of 385 feet, and is being continued towards the southern boundary of the property. South and Main Reef have been intersected in the 32nd level crosscut from this shaft, and it is hoped shortly to commence the 33rd level crosscut to the reef. The opening out of this section will provide new points of attack for the development of ore [illegible] depletion of the reserve. As compared with last year, there was an increase of 48,700 tons milled, the recovery value and working costs being lower by 2s. 8·8d. and 9d. per ton milled respectively, the net result being a working profit (excluding accumulated slimes) of £466,040, or £60,966 less than for the previous year. The extended sand-filling plant is now in satisfactory and regular operation.

The Manager, Mr. O. P. Powell, writes, *inter alia*:—It has been considered undesirable to attempt to maintain the grade of ore mined in previous years, as this could only be done by unduly encroaching on the ore reserves in the deep level portion of the mine. The time is rapidly approaching when there will be a marked diminution in the quantity of ore derived from the outcrop and upper levels. To help to compensate for this loss, development in the lower levels, particularly in the vicinity of No. 2 deep level auxiliary incline, is being pushed forward as rapidly as possible.

COMPARATIVE SAFETY OF ELECTRIC AND FUSE BLASTING.

Some Points from Germany and U.S.A.

It is usually urged in favour of electric blasting that on account of its being controlled from a distance it is safer than detonation by fuse. A recent accident in a Catskill aqueduct tunnel, where electric firing is employed, was reported in the daily press as caused by premature explosion. As a matter of fact, it was not, but the report suggested that possibly there is a danger concealed in this method which is not duly appreciated. It is possible to take great precautions in electric firing, such as making it necessary to close several connections to complete the circuit, and placing the operation in the hands of an experienced man with the apparatus under lock and key. But the danger of accidental closing of the circuit cannot be entirely eliminated, and the system has the disadvantage of setting off the blast instantly and without warning, whereas a spit fuse, like a rattlesnake, gives fair warning of its presence. In connection with this an abstract by *Engineering Record*, February 15, 1913, of a report by O. Dobbelstein, in *Glückauf*, is interesting. Many of the new German regulations, he says, are based on the belief that the system of firing by electricity is safer than that of ignition by the ordinary cord fuse. Electric firing, for example, has been made compulsory since January 1, 1912, in certain classes of mines in the Dortmund district. The belief is founded on statistical evidence given below. These figures deal with the years 1908 to 1911, inclusive, and show the number of fatal injuries in that period to have been 43 with electric firing and 51 with safety fuse, the injuries causing permanent disablement being 44 and 66, and temporary disablement 131 and 146, respectively. These figures, Mr. Dobbelstein contends, being absolute are valueless. In place of them he gives a table, in which the figures are related to the number of men at work in the mines. In those in which electric firing only was permitted, 71,555 men were employed, the number in the mines using the ordinary fuse being 112,698. The proportion per 1,000 is as follows: For fatal injuries 0·111 for electric firing and 0·076 for fuse; for permanently injured 0·101 and 0·105; and for slightly injured 0·328 and 0·220, respectively. Thus these statistics are in favour of the ordinary fuse system. This fact, it is stated, must be attributed to the often imperfect electric fuses and unsuitable firing machines used, and to the ignorance of the miner. It is practically impossible either to misunderstand or to misuse the cord fuse. But in this case also safety depends largely on the quality of the fuse. The relative value of these two systems is said to be becoming a question of the highest practical importance in view of the government regulations which are now being formulated to cover this subject. Doubtless, as Mr. Dobbelstein states, the accidents with electric firing are largely due to the poor detonators and firing apparatus and to the ignorance of the miners, but even the elimination of these unfavourable conditions would probably only put the method on a parity with fuse firing in point of safety. The choice between the two systems would not seem to be capable of legislative regulation. There are many defects in our state mining laws, and some grave omissions, but the choice of electric or fuse firing is one that may be safely left to the judgment of the operators, for the present, at least. Data of wider derivation and especially data on comparative results in America, may eventually show definite advantages for one system. The collection and analysis of such data is a thing highly to be desired.—*Engineering and Mining Journal.*

Inspector of Explosives' Report.

Part three of the annual report of the Mine Department for 1912, which has just been issued, is entirely devoted to the report of the Chief Inspector of Explosives. From the preamble it is made quite clear that the duties which have to be covered under Union call for the attention of the inspectors at such widely separate points that an increase in the staff is necessary if the work is to be properly performed. The Chief Inspector remarks that "at least one other inspector will be necessary to carry on the work, and . . . . . the explosives office should preferably not be in Johannesburg. Inspection could just as easily be made from Pretoria, a considerable amount of circumlocution being obviated by being close to the secretarial office, and time saved from being freed from the incessant interruptions and mainly unnecessary interruptions, by the public of Johannesburg and neighbourhood." The report goes on to say that exclusive of accidents in "manufacture," or accidents in "mining" of which the Explosives Act does not take cognisance, forty-nine accidents (or outrages) with explosives or other dangerous substances have come under notice during the year; twelve of these were the result of playing with explosives, while ten were instances of safe-breaking, these accidents causing the death of fifteen persons and injuries to thirty-two others. Three of these accidents, which were not attended with injury to persons, were due to explosions in stoves, apparently due to explosives in domestically used coal. Under the heading of miscellaneous, the following [illegible] were dealt with during the year. The largest quantity requiring to be destroyed was one hundred and ninety-five cases of a chlorate mixture for which the owner of a magazine of a small bankrupt factory could find no sale, next coming twenty-three cases of seven year old dynamite found in a mine magazine on the latter again being required for use, while several lots ranging from twelve cases downwards to a few [illegible] shell, purchased in Johannesburg as scrap, was also destroyed, the purchaser being alarmed at the contents after he had been rash enough to remove the fuse. A hundred sticks of dynamite were found in a pigeon loft of [illegible] several guncotton primers (military), and rounds of ammunition in a trade magazine in Kimberley. These latter in an open tin were alleged to have been there since the war.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Agitators and Victims.

To the Editor, *South African Mining Journal.*

Sir,—It is no exaggeration to say that there is no country in the world which offers more inducements to capital enterprise than South Africa, and at the same time none in which the want of capital is more keenly felt. On every hand this need is abundantly apparent, but in no respect more so than in the large number of unemployed at present leading a precarious and hand-to-mouth existence in every part of the Union. But for this want of capital there is not the slightest reason for any man or woman who is able and willing to work to be out of employment for a single working day in the year. The reason for this shortage of capital wherewith to create work for, and pay the wages of the thousands who are out of work to-day, is not far to seek. It is the Labour agitator who is unquestionably the cause of it, and he is therefore the working man's worst enemy. By causing dissatisfaction and unrest among the working classes he has almost irretrievably damaged South Africa's credit in the money markets of the world, and it is now not only a most difficult task to get money for South African investments, but every week sees more and more of what capital there is already in the country withdrawn. The most rabid and irreconcilable Socialist that ever lived can but acknowledge that labour cannot exist without capital, any more than capital can be usefully and profitably employed without labour, and yet he is doing his very utmost to cut the ground from under the working man's feet by causing a shortage of that commodity, the existence or otherwise of which means all the difference between prosperity and starvation to the wage-earner. That the Labour agitator is the cause of the bulk of unemployment in the country is amply testified to by the statement of the Secretary of the Miners' Association to the Minister of Mines only last Saturday. This statement was to the effect that unemployment amongst miners is to-day more acute than it has been for many years, and that he estimates 1,200 men to be out of work. Is this to be wondered at? What else can be expected after the happenings of July last on the Rand? Does not the whole history of strikes go to show that whatever minor advantages may be gained by them for the time being, the price that is paid for them is far too high? The agitator himself does not have to pay, but his misguided dupes do, and the coin they pay in is the poverty, privation and misery of thousands of men, women and children. General Botha, in his recent speech at Standerton, gave his hearers and the world at large, through the medium of the Press, to understand that, in the event of a recrudescence of the recent lawlessness and destruction of property on the Rand, he and his Government would not hesitate to have recourse to the very strongest measures to restore law and order and to save the country from ruin. It is sincerely to be hoped that in the event of further troubles he will redeem this pledge, and on the first signs of trouble brewing cause proclamations to be issued to the effect that in the event of any attempts at destruction of private or public property, or of a menace to the safety of the community, the Government will not hesitate to use all the forces at its command to repress and stamp out once and for all such lawlessness and outrage, and if, after such proclamations are issued, the militant section choose to defy Government to do its worst—then—let them take the consequences, and if those consequences lead to their extinction as a disturbing element in the country's welfare, so much the better will the country's chances be of recovering its prosperity. It is claimed that when troops are used as a means of quelling riots, innocent people are killed and injured, but what are innocent people doing in the company of those who are avowedly out for mischief and are self-convicted of Revolutionism? What would be thought of the man who, being caught in the middle of the night in another man's house in the company of a burglar, if he, on being arraigned before the magistrate, pleaded that he had no criminal intentions himself, but merely went with the burglar to see what he was doing? Does any sane man suppose that the magistrate would accept such a lame excuse and discharge him as innocent? Well, isn't it just the same thing? The now much-discussed revolver incident has leaked out in the very nick of time, for one thing is certain, and that is that a wave of disgust has come over the public mind on reading of it, and public sympathy, which has been fast waning, will now not only entirely disappear, but will return in the form of a revulsion of feeling against those who are self-accused of being capable of perpetrating so cowardly, so despicable an act, and that feeling will lead to a demand that any and every man associated with or aiding and abetting such dastardly conduct shall either be placed behind prison doors or kicked out of the country. The very idea of some bloodthirsty scoundrels holding a loaded revolver to the head of a country's Premier and threatening to blow his brains out if he does not cease his efforts to protect the community and its property by restoring order, is in itself enough to alienate public sympathy entirely and for ever from every kind of militant trade unionism. Doubtless there are many who will, on reading the foregoing, jump to the conclusion that I write only from the point of view of the capitalist, and that my view is a prejudiced one in consequence, so let me say at once I have not a shilling that I can call my own. I am a man who is entirely dependent upon what he can earn by his own work, for the maintenance of himself, his wife and family, and I deny the right of any man or combination of men to bring into existence those circumstances which have so effectually thrown me out of employment, and brought upon me and my family all those hardships and privations which, as a result of their wicked work, are now our lot in life. There are thousands of them who think and feel as I do, aye, and trade unionists too! But they dare not raise their voices in protest, lest a worse thing should befall them! Organised unionism is all very well and proper, but when it adopts means of endeavouring to ameliorate the lot of the wage-earner that bring in their train more misery and suffering than benefit, it is time to turn round and say, Hold! enough! Violence and bloodshed have been tried and have failed—now we will try more tolerant and constitutional methods, and those methods will surely win for the wage-earner what violence and bloodshed never has done, or ever will do. The loyalty of the railwaymen in the recent disturbances practically saved the country. Is anyone going to say that the Government and the public do not appreciate that loyalty? Who is going to say that the railwaymen by discountenancing and refusing to take part in the recent riots are not going to win more for their cause, than fifty strikes would have gained? Only let the railwaymen follow up their splendid lead by tolerant and consistently constitutional behaviour, and they will win hands down, and be the means perhaps of bringing into being methods of trade unionism which not only will be acknowledged fully by Government, but backed up by the public to the very last man and woman.—Yours, etc.,

A VICTIM OF THE LABOUR AGITATOR.

Durban, September 16.

INVESTORS' DIARY.

The following company meetings have been announced:—

Sept. 26.—Simmer and Jack Prop.
Sept. 26.—Sub-Nigel.
Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.

Rhodesian Section.

LATEST MINING NEWS.

The Selukwe Company's Report—Anglo-French Matabeleland—Lonely Reef—Susanna Mines—Jumbo Operations—The Rezende's Report.

THE report of the Selukwe Gold Mining Company, Ltd., for the year ended March 31 last states that shortly after the last annual meeting, the Tebekwe Syndicate terminated the tribute. A new tribute has been arranged, and the tributor had disclosed a narrow, but fairly well defined, reef, which at the present reduced level of working costs may now be treated with a margin of profit, and also a narrow stringer of ore, called the Saddle Reef, from which some tonnage of payable ore will be recovered. The expenses have been much reduced as compared with the previous year, and a net profit of £651 has been earned.

* * * *

The report of the Anglo-French Matabeleland Company for the year ended May 31, 1913, states that the profit and loss account shows a credit balance of £2,828 for the year. The available cash, or its equivalent, less sundry creditors, amounted to approximately £24,257 at the close of the financial year, as compared with about £17,700 at May 31, 1912, During the year the liquidator of the Penhalonga Mines distributed a fourth and final balance of 10¼d. per share, amounting in the case of this company to £751, which has been carried to the credit of profit and loss account. The 2,932 Rezende shares received in this liquidation and brought into the books at par were sold during the year at an average price of £1 6s. 9d. The directors have sold the balance of the Rhodesian Railway Debentures, viz., £5,000, which realised an average price of 62½, as against the price of 40 at which they stood in the books of the company. The mining policy of the board is to prove the value of its 200 claims on the Belingwe Gold Fields with as little expense as possible to the shareholders. As regards the claims not yet let on tribute, certain prospecting or assessment work is being carried out involving only a small expenditure.

* * * *

Lonely Reef: Cable dated August 13.—No. 10 level 20 ft. drive, average width of reef is 57½ ins., assaying 2 ozs. 4 dwts.; total width not exposed. Length exposed Thursday, was 30 ft. and the same character as in the upper levels. London office note: The development referred to in the above cable has been carried out from the bottom of No. 2 winze from the 9th level, the new incline shaft not having yet reached the horizon of the No. 10 level.

* * * *

Susanna Reef: 11th level south shoot extension of Spur Reef has been driven 5 ft. to a distance of 112 ft. from north shoot. At 80 ft., reef 66 ins. wide assays 12·2 dwts.; at 85 ft., reef 70 ins. wide assays 16·4 dwts. The samples were taken over the full width of reef exposed by cutting for winze. Winze 10 to 11 south shoot has been sunk 5 ft. to a depth of 61 ft.; at 55 ft., reef 26 ins. wide assays 4·9 dwts.

* * * *

The report of the Jumbo Gold Mining Company, Ltd., for the quarter ended June 30 states that 9,210 tons were crushed during the period under review for 3,162 ozs., equal to 6·867 dwts. per ton treated. Costs amounted to £14,991, or 32s. 6d. per ton, while a loss is shown of £1,678. The whole of the outstanding debentures have now been redeemed and cancelled.

* * * *

The report of the Rezende Mines for the quarter ended June 30 showed an aggregate profit of £7,643, subject to the realization of silver and lead in London, an increase of £234 over the preceding three months. The total tonnage milled was 39,377, including the ore treated by the tributors' plant taken over on May 4, against 25,600 tons crushed from the Rezende and Penhalonga sections alone in the preceding three months. Working costs on the Rezende section declined from 25s. 8½d. to 24s. 2½d. per ton, and the Penhalonga section from 17s. 9½d. to 11s. 11½d. per ton. The average profit from all sections, including tributors' royalty up to May 4, was 3s. 10·6d. The footage developed during the quarter rose further from 2,502 to 2,850. In the Rezende central section the installation of a more powerful pumping unit has facilitated better progress with developments. On the 900-ft. level 64 ft. were driven, and the widths of reef thereby exposed averaged 7¼ dwts. for 52 ins., but this width represents a portion of the ore body, which is too wide to be fully exposed in the face of the drive.

* * * *

At the annual meeting of the Northern Copper Company held in London the other day, the chairman remarked, *inter alia*:—Owing to the porous nature of the ore "in place" and the cavities which were discovered when actual stoping had been commenced, it has been deemed advisable to make a considerable reduction in the estimated tonnage of high-grade ore. The Bwana M'Kubwa Copper Mining Company, Limited, is developing an ore body over 70 ft. wide containing an enriched zone, about 4 ft. wide, which has been proved to a depth of 350 ft. A large amount of development work has been done on that property. The 100 ft. level has been driven 1,859 ft., at the 250 ft. level 2,029 ft. have been driven, at the 350 ft. level 363 ft., and the 450 ft. level has been driven 101 ft., making a total length of 4,352 ft., and, in addition, there are adits, winzes and crosscuts, making the total development 12,571 ft. Outside the rich portion of the mineralised zone the ore body is estimated to contain about 5 per cent. of copper, but this should improve in grade when the zone of oxidation is passed. At the 350 ft. level a large sample of the low-grade ore taken over a width of 20 ft. averaged 7·3 per cent. of copper, which is quite satisfactory. One of the members of the Board of the Bwana M'Kubwa Copper Mining Company, who is a metallurgist, is proceeding to the property. Up to the present time about 1,200 tons of copper concentrates have been produced, containing about 400 tons of copper, and shipments amounting to 750 tons of copper concentrates have already been made. You will have seen from our report that the Kafue Copper Development Company, Limited, has produced 2,253 tons of metallic copper and matte. Since the issue of the report a further 129 tons have been shipped, making total shipments of 946 tons, and an additional 46 tons have been sold, making the total realisation 605 tons, which produced £36,738 8s. 3d. There are in transit and at the mine 1,307 tons of copper matte.

* * * *

A cablegram from Bulawayo to the Eldorado Banket states:—" No. 11 level in crosscut No. 1, from 3 ft. to 10 ft. Reef is 84 ins. wide, assaying 2 ozs. 3 dwts. per ton, or 17 dwts. high values reduced. Crosscut is in Main Reef still; will telegraph again further particulars as soon as possible.—McDonald." Further cablegram:—" Referring to my telegram of 14th, full width is 120 ins.; average value 1 oz. 15 dwts., or 16½ dwts. high values reduced.—McDonald."

* * * *

A cable from Bulawayo dated Tuesday [illegible] stated as to development in the Shamva:—" Referring to last annual report, length pay shoot No. 3 level now proved to be 510 ft., averaging 5·55 dwts. over width of 29 ft." (Office note.—The engineer's report enclosed with the last annual report of the company gave the length of the ore shoot on the 3rd level as 410 ft., 31 ft. wide, averaging 5·66 dwts.)

THE WEEK IN THE SHAREMARKET.

Firmer with Improving Tendency—Specialities in Favour—Van Ryn Deeps, New Kleinfonteins, and Crown Diamonds in Demand.

THE tone and temper of the market has been steadily improving during the week, and the outlook is very much better. Recruiting prospects are said to have considerably brightened, and the return to normal conditions on the Rand is now only a question of time. The Jupiter people are about to issue an official statement, but as it has been generally anticipated, it will come as no surprise to the general market. The annual reports of the New Modder, Simmer and Jack, Nourse and Sub Nigel, issued this week, are all quite satisfactory. These contain no bad features, beyond those already known, and the New Modder report is excellent. Van Ryn Deeps are still in favour on account of their good prospects; while among tins, Zaaiplaats are fancied, and among diamonds Crowns are in growing demand on good reports from the mine. Several of the cheaper lines are being picked up in anticipation of a general advance in prices.

	Friday, 12th.	Sat., 13th.	Mon., 15th.	Tues., 16th.	Wed., 17th.	Thurs., 18th.
Adair Ushers ..	—	0 3B	0 3B	0 3B	0 3B	0 3B
African Farms. ..	15 3B	15 4B	15 6B	15 8	15 9	15 8
Apex Mines ..	17 3B	17 6B	17 6B	17 9	18 0B	19 3B
Bantjes Consolidated	14 3B	14 3B	14 6B	14 3B	14 0B	14 6B
Benoni Consolidated.	—	2 0B	2 3B	2 3B	2 3B	2 3B
Brakpan Mines ..	—	58 0B	58 6B	58 0B	—	58 6
Breyten Collieries	—	25 0B	25 0B	26 0B	25 0B	25 0B
British S.A. ..	21 0B	—	21 6B	—	21 0B	—
Bushveld Tins ..	0 7	—	0 6B	0 8B	0 7B	0 7B
City & Subs. (£4)..	43 0B	43 0B	43 6B	44 0	43 9B	44 0B
City Deeps ..	55 0	55 0B	55 6B	54 6B	54 6B	54 0B
Cloverfield Mines ..	4 3	4 3B	4 3	4 3B	4 3B	4 3B
Clydesdale Colls. ..	—	8 0B	8 0B	8 0B	8 0B	8 3B
Cons Langlaagtes	25 0B	25 6B	25 6B	25 6B	25 0B	25 6B
Cons. Main Reefs ..	16 3B	16 6B	16 9B	17 0	17 0B	17 0†
Cons. Mine Select.	8 0B	—	8 0B	8 0B	—	—
Coronation Colls....	11 6B	11 6B	11 6B	12 0B	12 0B	12 6B
Coronation Freeholds	—	0 6s	—	0 5B	0 5B	0 5B
Crown Diamonds...	10 0B	10 0B	10 0B	10 3B	10 6	10 0*
Crown Mines ..	132 6B	133 9B	—	133 9B	—	133 9B
Doornhoek ..	—	4 . 0B	5 6B	6 0	6 0B	-
East Rand Centrals	7 9B	7 9B	7 9B	7 9B	7 9B	7 9B
East Rand Coals (2/6).	1 9B	1 9B	1 9B	1 9B	1 9B	1 9B
East Rand Deeps ..	1 5B	—	1 5B	—	1 5B	1 5B
East Rand Props...	45 0	45 0B	46 0B	46 0s	46 3s	—
Eastern Golds (1/-)	1 1B	—	1 0B	1 0B	—	1 0B
Frank Smith Diam.	9 7	9 4B	9 5	9 3B	9 3	9 3B
Geduld Props. ..	20 9B	20 0B	20 6B	20 6B	20 0B	20 6B
Geldenhuis Deeps	30 0s	—	—	—	—	—
General Minings ..	13 6s	10 0B	—		—	12 6s
Glencoe (Natal) Colls.	7 4B	7 0B	7 0B	7 0B	7 0B	7 3B
Glynn's Lydenburgs	13 9B	13 6B	—	-	—	-
Government Areas	21 3	21 6	21 3B	21 6	21 6B	21 9
Jupiters	4 6B	4 6B	4 6B	—	4 9B	4 9B
Kaalfontein D. (2/6)	0 3B	0 3B	0 4B	0 4B	—	0 4B
Klerksdorp Props.	2 2	2 2B	2 2B	—	2 3B	2 3
Knight Central ..	7 6	7 3B	7 3B	-	7 3B	7 3B
Lace Props. ..	2 10B	2 9B	-	2 10B	2 9	2 10B
Luipaardsvlei Est.	-	—		6 0B	6 0B	6 0B
Lydenburgs Gold Fms.	3 3s	3 3s	2 9B	--	2 9B	2 9B
Main Reef Wests ..	9 0B	9 3B	9 3B	9 3B	--	8 9B
Main Reef West Debs.	—	£65B	—	£70B	£65B	£70B
Meyer & Charltons	—	-	—	100 0s	—	—
Middlevlei Estates	1 0B	1 0B	1 0B	1 0B	1 0B	1 0B
Modder B's ..	76 6B	76 0B	75 0B	75 0B	76 6	75 0B
Modder Deeps ..	29 6	29 3B	29 6B	30 0B	31 0	30 9
Natal Navigation Col.	—	—	—	—	—	14 0B
New Era Cons. (5/-)	6 3B	6 3B	6 0B	6 3B	6 6B	6 3B
New Geduld Deeps	1 10	1 10B	2 0	2 0B	2 0B	2 0B
New Kleinfonteins	18 3B	18 6B	18 9B	20 0B	20 6B	21 6B
New Modders ..	—	—	220 0B	-	—	—
New Rietfonteins ..	--	-		3 3B	—	2 0B
New Unifieds ..	11 0s	14 3s	14 0s	12 0B	12 0B	12 0B
Nigels	—	15 0B	15 0B	—	15 0B	—
O.F.S. & Tran. Dia.	1 10B	1 11B	1 10B	1 10B	2 0s	1 11s
Pickstone Golds ..	—	-	—	40 0s	—	—
Pretoria Cement Co.	45 0B	46 0s	45 0B	45 0B	45 0B	45 0B
Princess	4 6B	4 6B	4 6B	4 3	4 9	4 0B
Rand Collieries ..	2 6B	—	4 0s	—	3 9s	-
Rand Klips ..	1 3B	1 3B	1 3B	1 3B	1 4B	1 3B
Rand Nucleus ..	1 8B	1 9B	1 9B	1 9B	1 9B	1 9B
Randfontein Deeps	3 0B	3 0B	4 9s		4 9s	
Randfontein Estates	27 6	27 3	27 0B	26 6B	26 6B	26 6B
Roberts Victors ..	31 0B	30 0B	30 0B	31 3B	31 6B	31 0B
Robinson Deeps ..	31 6B	31 6B	-	31 0B	—	—
Rooiberg Minerals	28 3	28 6B	28 3B	28 3B	28 6B	29 0B
Shebas	5 0B	5 0B	5 0B	5 0B	5 0B	—
Simmer Deeps .	2 3	2 0B	2 0B	2 0B	2 0B	2 0B
S.A. Breweries ..		41 0	41 0B	40 0B	-	41 6s
S.A. Lands ..	3 3	3 3B	3 4	3 3B	3 3B	3 4B
Springs Mines ..	15 9B	16 0B	15 9B	15 9B	15 9B	15 9B
Sub-Nigels	—	—	9 3B	10 3s	—	10 3s
Swaziland Tins ..	–	50 0s	50 0s	49 6s	50 0s	50 0s
Trans. Coal Trusts	36 0s	35 3B	35 0B	36 0s	35 6	35 0
Trans. Cons. Lands	—	—	22 6B	22 0B	—	—
Trans. G.M. Estates	—	52 0B	—	—	52 6B	53 0B
Van Ryn Deeps ..	32 6B	33 0	33 9	33 9	31 6	34 0
Village Deeps ..	—	38 0B	—	39 0s	—	—
Vogel. Cons. Deeps	—	—	0 6B	0 6B	—	—
Witbank Collieries	—	38 0B	38 6B	39 3B	39 0B	39 0B
Witwatersrands ..	70 0*	70 0B	70 0B	—	69 0B	—
Wit Deeps ..	54 6B	55 3B	55 6B	56 0B	56 6B	56 0B
Wolhuters	14 6B	14 6B	14 6B	14 6B	14 9	15 0B
Zaaiplaats Tins ..	36 9	37 9	37 0B	37 0B	36 9B	37 0B

B Buyers. s Sellers. *20 Shares. † 160 Shares.

MINING MEN AND MATTERS.

Former students of the Royal Technical College, Glasgow, are reminded that the fifth annual dinner will be held at the Carlton Hotel, Johannesburg, on Saturday, 27th September. Tickets can be obtained from the hon. secretary, Mr. Jas. Gray, Box 5254, 'phone 4240.

* * * *

The Association of Certificated (S.A.) Mechanical Engineers (Mechanical and Electrical) are meeting at the Langham Hotel on Saturday, 20th September, at 8.15 p.m., for the annual dinner, at which some of the leading financial, engineering, legal and commercial representatives, including the Minister of Mines and Sir Lionel Phillips, and the President of the Chamber of Mines, will be present. The hon. secretary, Mr. Kenneth Austin, P.O. Box 4305, Johannesburg, is making all arrangements for the dinner, and those desirous of attending should send in their names at once.

* * * *

The ordinary monthly general meeting of the Chemical, Metallurgical and Mining Society of South Africa will be held in the Lecture Theatre, South African School of Mines, Eloff Street, Johannesburg, on Saturday evening, the 20th inst., at 7.45 o'clock.

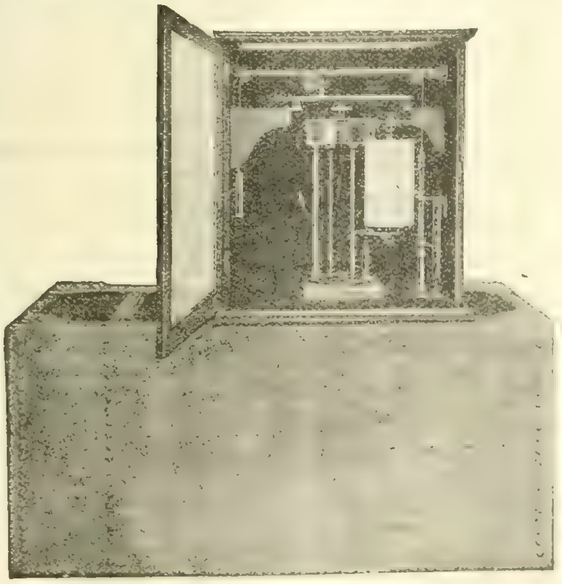
"In every Australian State the Government gives liberal assistance to the mining prospector," says the *Financial News* of August 21, 1913, "and one of the best means adopted is that of establishing reduction plants where the mineral ores are treated cheaply for the individual prospectors. In Western Australia 52 Government batteries have been established, the capital cost being £300,000, and during the past fifteen years they have returned to the prospectors gold to the value of £4,000,000. Some of the most prosperous mining districts in Western Australia owe their existence to the provision of public crushing facilities by the Government."

After a long period of depression, the issues of the British Westinghouse Electric Company have shown a much better tendency of late, the £3 preference shares having risen from about 10s. to not far short of £1 since the beginning of the present year, while the 4 per cent debentures have gained several points in the time. This advance in share quotations reflects the improvement which has been apparent in the business of the company of late, and especially the securing of the contract for the electrification of the suburban system of the London and South Western Railway, which involves an initial amount of £300,000, with the prospect of orders valued at £200,000 more provided satisfactory results are achieved at first. This should mean a substantial addition to the company's profits for some little time to come, and if, as seems likely, a further reconstruction of the company is to be carried through, means may be found whereby some of these profits may be distributed to shareholders.

Engineering Notes and News.

Steel Pipes v. Cast Iron Pipes.

The question whether solid drawn weldless steel and lapwelded wrought iron pipes, or cast iron pipes, should be adopted for water and irrigation purposes, as well as gas mains, has been much discussed in recent years. It may be stated that in the competition between the manufacturers of steel and cast iron pipes, the question of the resistance against the attacking influence of the soil of the two different classes of piping has given rise to arguments of great length. The bulk of literature in existence concerning this question must, therefore, be regarded to a great extent with a certain reserve, as it treats the subject from a business point of view only, viz., to describe the cast iron pipe as the only one suitable and to disparage the advantages obtained by using steel pipes or vice versa. This kind of advertisement, under the pretence of science, is only calculated to mislead the public opinion. The way in which certain pipe lines are quoted, which have been destroyed sooner or later through acids and rust, is not at all suitable to gain a more correct opinion with regard to the durability and resistance of cast iron and steel under the same conditions—a matter of greatest importance, not only from a technical, but also from an economical point of view. It has, for instance, been repeatedly stated that cast iron, owing to its chemical composition, has less affinity for the elements of oxidation and in proof of this the manufacturers of cast iron pipes enumerate a number of conduit pipe systems, such as Versailles, Weilburg, Homburg, and other places where cast iron pipes have remained in good conditon for a hundred years and longer. From this it would appear to those who are not experts, that the quality of these old mains is the same as it is to-day. This, however, is not the case. The cast iron of the past, as used in Versailles and in other places, is entirely different from modern cast iron, and for this reason does not come within the scope of any discussion. In the modern manufacture of cast iron, the percentage of silicon contained in the material has for technical and economical reasons been gradually increased. The following causes have acted together: The gradually growing use of coke iron instead of the old charcoal iron; the improvement of the blast furnaces and particularly the necessity due to the rapidly-growing production of iron, to use a material of less pure quality than formerly. Silicon displaces the carbon in the chemical combination of the iron, and consequently causes the former to change into graphite. Chemical analyses have proved beyond all doubt the difference between the two kinds of iron in this respect. It has been ascertained that modern coke iron contains on an average 2½ to 3 per cent. of free graphite and only about 6 per cent. of chemically-bound carbon, whereas in the case of the famous cast iron mains at Versailles the percentage of chemically bound carbon amounts to as much as 1.36 per cent. These facts are of the utmost importance when comparing the old charcoal iron with the modern coke iron with regard to the question of corrosion, as it is only the chemically-bound carbon that increases the resistance against rust and corrosion, not the graphite which alters the structure of the material. Modern cast iron is less rust-resisting than old charcoal iron and accordingly it will be necessary to exclude these old mains from our investigations. We must compare wrought iron and steel with the cast iron as it is nowadays, exclusively on the market, and not with material manufactured a hundred years ago. It is a very interesting fact that, for instance, in the town of Homburg, where the old cast iron main has given such excellent results, a cast iron main of modern manufacture used for the extension of the system has, according to a report of Mr. Wehner, in 1907 been destroyed after ten years' service. The experiments made with regard to the resistance of steel and cast iron by prominent engineers of England, America and Germany, by Government Material Testing Institutes, and other impartially investigating authorities, are too numerous to be dealt with in detail in this report. Suffice it to state the undeniable fact that the outcome of all these highly-interesting tests is: "Where pure rusting is concerned, i.e., the action of oxygen with moisture, which is quite different from the action of salts and acids as may be seen later on, the chances of being destroyed are the same for both cast iron and steel; at any rate even the keenest advocates for cast iron must admit that this question is still undecided. The great danger, however, for cast iron, as well as steel, is not the pure rusting, but the destroying effects of salts and acids contained in the soil. It is, therefore, of the greatest importance to solve the problem how to prevent the destruction of the pipes by the above-mentioned substances. Many experiments have also been made in this respect, and what



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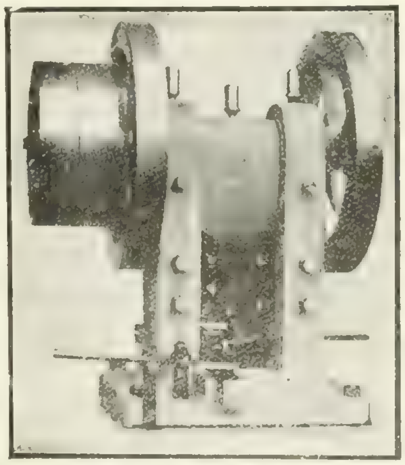
is the result of scientific research with regard to the resistance of the unprotected material against the action of acids? In his essay on "Material for Rural Water Supply," 1906, Dr. Kirchweger, Neuwied, states that: "Neither asphalted-coated cast iron pipes nor asphalted-coated steel tubes offer sufficient resistance if the water contains free carbonic acid and oxygen. For this reason the removal of any such carbonic acid and oxygen is necessary." Town Inspector Geissler, Charlottenburg, Berlin, in writng on "High Pressure Tubes for Sewers," says: "With respect to destruction by acids there is no difference between cast iron and ingot iron." The Royal Material Testing Offices at Grosslichterfelde, Berlin, come to the following conclusion: "The principal enemies are the acids contained in water and soil. While inside the pipes free carbonic acid and oxygen are chiefly injurious, but can be counteracted by appropriate management of the main, the worse enemies are those which are attacking the main from outside, as acidiferous ground, swamps, marshes, also slag and cinders, put into the ground and soil-infected by leaky manure-cisterns, and thus saturated with ammonia. As far as these attacks from acids are concerned the conditions are entirely different if compared with those causing a mere rusting. It is a mistake, though quite common, to call the destruction of pipes 'rusting,' even though corrosion by acids is meant. Entire destruction will hardly take place by pure rusting, and always by the action of acids or action of rust and acids combined. Cast iron is, however, more liable to corrosion by acids than wrought iron." In 1883 Mr. Gruner, Metallurgist, in "Annales des Mines ou Recueil de Memoires sur l'Exposition des Mines et surles Sciences et de les Arts qui s'y rapportent-publiees sous l'autorisation du Ministre des Travaux Publiques," discussed this question, and came to the conclusion that: "Only in slightly acidous gasses cast iron behaves in a more favourable way than wrought iron. Therefore, in order to form a correct opinion regarding the behaviour of cast iron or steel in the soil, tests have been made with acidous water. The test with acidous water comes nearer the actual working conditions in the soil on account of the absence of air. These tests proved that steel and wrought iron is superior. The results are as follows: In acidous air steel is attacked more heavily than cast iron; in fresh water or sea water, cast iron is attacked more heavily than steel; in acidous water, cast iron is attacked more heavily than steel." Of special interest in this respect is the opinion of Professor Dr. Krohnke, as set forth in his booklet "On the Behaviour of Cast Iron and Wrought Iron in Water, Brine, and Acids (1911)." The origin of Krohnke's book is sufficient evidence of the impartiality of his statements. Krohnke also is sufficiently impartial to warn his readers not to form general rules based on the results of some experiments. He bases his arguments on the principle that rusting and destruction by acids are two quite different processes and cannot be compared with each other. When replying, therefore, to the question as to whether cast iron or wrought iron pipes are to be preferred, and taking only the resistance of the material against the influence of rust into consideration, he comes to the following conclusion: "It seems impossible to give a general reply to this question, for the only reason that both classes of piping, as the experiments have shown, behave differently according to the aggressive nature of the liquids or gasses. Various destroying elements not only have quite a different effect on cast iron and wrought iron pipes, but also, the way in which these chemical influences are acting on the material may cause certain differences in the lasting of the various pipes. The only thing which can be considered as absolutely certain is that acidous fluids of whatever kind or strength, destroy cast iron pipes very much quicker than wrought iron tubes." The question of rusting evolves itself more and more into the question of protection against rusting. The choice between cast iron and wrought iron must consequently be subject in most cases to a special consideration, in which the question of rusting is of minor importance, the means of protection and of preventing destructive effects, however, require correspondingly greater attention." Scientific tests with unprotected pipes have thus demonstrated that wrought iron is better adapted to resist the action of acids than cast iron pipes.

(To be continued.)

Hardinge v. Chilean Mills.

At the last Buttee meeting of the American Society of Engineers a paper was read by Robert Franke entitled "Hardinge Mills v. Chilean Mills." For neither of these grinding appliances is there seemingly any particular scope on the Witwatersrand, but since machines of these types are suitable for certain mining propositions in the outlying districts and in Rhodesia and also since a Hardinge mill figures in the reduction plant of the Village Deep mine, reference to the comparative results secured should prove of some interest. The tests were carried out at the Miami copper mine. Delays with these two types of mills in this plant have been found to be as follows:—Chilean mills: Screen delays, 0·57 per cent.; repair delays, 1·54 per cent.; total delays, 2·11 per cent. Hardinge mills: Re-lining delays, 0·71 per cent.; repair delays, 0·58 per cent.; total delays, 1·29 per cent. Power charges were:—Chilean mill: Crude-ore tonnage, 7·5 hp.-hr. per ton; actual feed tonnage, 10·7 hp.-hr. per ton. Hardinge mill: Crude-ore tonnage, 6·7 hp.-hr. per ton; actual feed tonnage, 9·6 hp.-hr. per ton. Cost of maintenance was for the Chilean mill $·05066 per ton, and for the Hardinge mill $·04545 per ton. As to crushing efficiency the units of reduction performed by the Hardinge mill exceed those of the Chilean mill by from 18 to 23 per cent., depending upon the degree of accuracy attained in the assumptions made in the calculations, and considering 5 per cent. as a safe limit. This evaluation proves that the Hardinge mill converts more of the power consumed into reduction of the charge than does the Chilean mill. The net gain in cost by operating with the Hardinge mill, for the practice of this plant, shows as follows:—Cost per ton: Operating—Labour, 0·50 cents.; power, 0·6 kilowatt-hour, 0·75 cents.; total, 1·25 cents. Maintenance, 0·50 cents.; depreciation, 2·50 cents.; saving, 4·25 cents.



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Finance, Commerce, and Industries.

Mr. Hoy and his Critics.

The remarks upon the shortage of railway trucks by Mr. Alexander Aiken and Major Bagot, at the annual meeting of the Coronation Collieries, have not escaped the attention of Mr. Hoy, General Manager of Railways for the Union, who has vigorously combated them in a statement to the Press. Mr. Aiken, it may be recalled, said that by reason of the shortage of trucks the nascent trade with the East through Delogoa Bay had been dislocated, and that the Coronation Collieries had lost more than a month's work out of twelve, though standing charges and whites' wages had to be paid in full notwithstanding. Other speakers suggested that action should be taken in Parliament. Mr. Hoy supplies the *Transvaal Leader* with certain statistics concerning the supply of engines and trucks. These he prefaced by a criticism of his critics which should be of great interest to merchants throughout the Union. "There is one point," he said, "that these people never seem to consider; certainly they never refer to it. It is the fluctuation of the traffic in merchandise. Maize and coal, too, fluctuate in spurts, according to the manner in which the consumers come in. There is a rush one day, and there is none the next. Is it a business proposition, when we are handling 5,000,000 tons of coal, that these mines should expect to rely on transportation coming like clockwork? I say it isn't. It isn't business. As General Manager, I say that I have been keeping pace with the times. I know that the coal output is going to expand. I have confidence in the future of coal and maize. We are going to have bigger trade in them, and I am providing for it. I am going to order trucks and engines costing £350,000. I see that there was talk of action in Parliament. I should like to ask Major Bagot if the Victoria Falls Power Works have never stopped. Why, they have had to change over to steam because of the uncertainty of electricity. Are the Victoria Falls Power Works run like clockwork? No; but Major Bagot expects it of a much bigger concern like the Railways." Summarised, the statistics prepared by the General Manager for the *Leader* show that since Union (May, 1910) to the end of last month, 109 engines have been placed in traffic. Ordered, and yet to be placed in traffic within the next nine months, are 158 engines, of which 35 are due by the end of this year. Also, since May, 1910, to the end of last month, 4,667 trucks were placed in traffic. In numbers and classification they are: 190 hopper trucks for coal; 3,498 trucks suitable for coal and general traffic; 721 cattle trucks; and 258 meat, fruit, refrigerator, and explosives trucks. Trucks ordered and yet to arrive are: 50 50-ton hoppers, due this or next month; 2,319 trucks suitable for coal and general traffic; 500 cattle trucks; 600 small trucks for sheep, and suitable for coal and general traffic; and 87 miscellaneous trucks—a total of 3,659. Approximately 700 of these trucks will be placed in traffic before the end of the year. The total cost of engines still to arrive in service is £1,048,161, and of wagons £746,938. The approximate cost of engines and stock placed in service since Union is £1,600,000—a grand total of £3,395,099. The above figures are not inclusive of narrow gauge or coaching (passenger) stock.

* * * *

An American Envoy of Commerce.

Mr. Ralph M. Odell, a special agent of the United States Department of Commerce, Washington, who is making an extensive tour for the purpose of studying and reporting to his Government on the cotton goods markets of the various countries of the world, visited Johannesburg a few days ago. The results of Mr. Odell's trade investigations in South Africa will be published by the American Department of Commerce in a special monograph, and will be distributed among the cotton manufacturers of the United States. Mr. Odell is one of half-a-dozen agents despatched around the world by the Department of Commerce, in order to supplement everywhere the work of the consuls in sending home information likely to be of value to American merchants in expanding old markets and opening up new. Each agent deals with a special branch of commerce, and each is an expert in that special branch. Mr. Odell is a cotton-grower, and is interested in extensive cotton mills in North Carolina, and he was selected for his mission with the approval of the trade as a whole. Starting from Washington in October of last year, he covered Europe, including Turkey and the other Balkan countries, and then made his way to the Sudan, and down the East Coast of Africa to Natal. Mr. Odell's report on the South African cotton trade will be awaited with interest on this side—though it is doubtful if he can add much to the exhaustive reports made by Sir Sothern Holland, the British Trade Commissioner, on the subject.

* * * *

Capetown Finances.

The Capetown Mayor's Minute, which was issued to the City Council last week, contains a valuable memorandum on the state of the City finances and the general position of Capetown, drawn up by the City Treasurer, Mr. C. B. Martin. We extract the following passages:—One of the most striking signs of the times is the amount which is being invested locally in gilt-edged securities. Capetown has become the principal, if not the only centre in the Union, where South African Government and Municipal Stocks can be bought and sold freely at all times of the year. Those who are desirous of investing funds, and who require an assured income either for themselves or for those dependent upon them, have been largely investing in high-class South African securities, and the extent to which this is being done in Capetown can be gathered from the amount of City Stock which is held locally. On the 1st July, 1911, the amount so held was £108,300, being 3·61 per cent. of the total loans raised and outstanding. By the 30th June, 1913, the local holdings had nearly trebled, having increased to £300,000, being 10·02 per cent. of the total raised and outstanding on that date. The last Corporation loan, raised in London, was in 1905; since that date the City has been financed from local sources, including the flotation of two loans, amounting to £145,000. With the exception of £500, the whole of these loans are still retained by South African investors. Capetown is the investment centre of South Africa, and will become increasingly so in the future. I know that during the past twelve months Government and Municipal Stocks have been purchased in London for the local market to a figure considerably in excess of half a million, and this represents only the purchases made through sources which are accessible to me. In view of the fact that this is the last year that the accounts of the City will be presented and comparisons made with the results of previous years, it may be interesting to compare the figures of to-day with those of the City of Capetown when the first Town Council was elected in 1867. Total net revenue: 1867, £18,322; 1912, £379,165. Value of rate levy (excluding water rate, 1867): 1867, £11,303; 1912, £170,352. (Note: Total rates are not payable on all properties.) Valuation of rateable property: 1867, £2,034,540; 1912, £11,313,473. Number of properties separately assessed: 1867, 4,338; 1912, 11,284. Rates levied: General rate, in the £: 1867, 1⅜d.; 1912, 3 5-16d. Water rate, in the £: 1867, ¼d. School Board rate, in the £: 1912, ⅛d. Rural Council road rate, in the £: 1912, 1-6d. Rural Council general purposes, in the £: 1912, 1-48d. Number of officials appearing on the salary list: 1867, 14; 1912, 122. Citizens can look back with pride on the fact that during the years of the most severe depression that Capetown has ever known—when the Colonial Government suspended their Sinking Fund—their efforts to maintain the credit of the city were successful, and the Council was able not only to pay its way, but also to make due provision for the repayment of loans. All those dreary years now lie behind us, and it is good to know that all liabilities were met as they became due, and each year of depression was finished with a small credit balance, even though on one or two occasions it did not amount to more than a couple of hundred pounds. I think the city has reaped some of the rewards due to the efforts made during the slump. Its credit stands high in the world—higher than that of any South African Municipality—and its citizens, having learned to meet their liabilities in evil days, are now in a position to reap the benefits which arise from proved and tried solvency. The future of the Cape Peninsula is not dependent upon any one source of income, but, in addition to the great advantage of being the Parliamentary capital of the Union, its prosperity is based upon the broad foundations of agriculture, commerce and manufacture, backed by great educational and residential facilities, and there can be no doubt but that many bright years lie ahead of the Mother City of South Africa.

* * * *

Iron in South Africa.

At the annual meeting of the Associated Chambers of Commerce of South Africa, held in Kimberley, Mr. Warington Smyth, the Secretary of the Government Department of Mines, made some interesting references on Monday last to the mineral resources of the Union and the work being done by the Government in the development of these resources. Arising out of a motion by Mr. Gibbs that the Government should endeavour to foster the establishment of local industries, Mr. Smyth delivered a lucid address on the mineral prospects of the Union, not the least important portion of which dealt with the iron industry. In regard to this the Secretary for Mines recalled the fact that a few years ago Mr. Harboard, an expert, was appointed to report on the known occurrences of iron ore in South Africa. It was not an entirely favourable report. Mr. Harboard criticised the quality of our ores, and found that in the majority of cases the percentages were low. In certain other cases there were rich and valuable deposits of hematite; they were limited in extent, and the report did not hold out any strong hopes of success. On the market question it was interesting to note that they were situated in a Continent stuck out in the middle of the sea, far from European markets, and if they could produce at the same cheap rate as Europe they also had the disadvantage that they were a long way from the markets of the world. Their future markets might be South America and Australia. They might come in time if the industry could be developed, and if they could satisfy themselves that they had got an ore by which they could capture those markets. The great difficulty in the past in regard to Transvaal ores had been the presence of titanic acid. These titaniferous ores had been a puzzle to them, and the great problem had been how to deal with them. The Swedes had made progress with them, and the French claimed to have a treatment by which a great advance had been made with refractory ores. In Pretoria there were more hopes of the French electrical furnace than were entertained by scientific men in general. The latter told them that satisfactory as the experiments had been, they had not yet assumed sufficient importance from an industrial point of view. One of the Government officers was at present in Sweden, and it was hoped soon to have his report upon the Swedish method. During the past year attention had been drawn to several deposits which were visited by Mr. Harboard, the extent and grade of which had not been fully appreciated until comparatively recently. He (Mr. Warington Smyth) referred to the iron ore deposits near Kimberley, in the north-west, and the apparently valuable discovery to the north-east of Pretoria, some 25 miles from the capital. He had reason to believe that both these deposits were being examined by experts, and that private enterprise would probably do a great deal to open them up.

Messina Copper.

The August operations of the Messina (Transvaal) Development Company were as follows:—The footage for the month was 362 feet, including 35 feet sinking No. 5 shaft, which has reached a total depth of 824 feet. The mill ran 24 days and treated 2.640 tons of ore, producing 367·22 tons concentrates, average assay value 46·4 per cent. copper; also 309 tons middlings, average assay value 7·3 per cent. copper. No. 1 smelting furnace ran during the month, producing 76 tons of matte, average assay value 50·84 per cent. copper. No. 2 furnace was started on the 28th of August. The Bonanza lode was exposed for a width of 20 feet, assaying 7·9 per cent. copper, at No. 5 shaft station in 8th level. On the 9th level the Bonanza lode has been exposed for a width of 44 feet, average assay value 8 per cent. copper over full width. The new Huntingdon mill and vanner plant was completed and is running satisfactorily. The new concentrating plant and pumping plant is nearing completion. Other plant, including electric generator, compressor, winding engine, headgear, boiler, etc., is well in hand.

The report of the Victoria Falls and Transvaal Power Co., Ltd., for the year ended December 31 last states that the profit for the year amounted to £446,380. After providing for debenture interest and depreciation, there remained a balance of £215,367, from which a preference dividend had been paid. The sum of £96,786 was carried forward. The report further states that there will be continued increases in the demands from consumers; that the Vereeniging Station has proved the most reliable, and that further machinery is being ordered to supply an additional 90,000 horse-power.

CONTINENTAL

TYRES.

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Automobile Notes.

The Motor Car in War.

General Beyers, in the course of an interesting speech to the members of the Transvaal Automobile Club on Saturday, at the presentation of the Schlesinger Trophy, foreshadowed the creation of an Automobile Reserve in connection with the South African Defence Force. For heavy transport motor traction has long been in use in all modern armies, but it is something different that General Beyers has in view, namely, the tactical use of the ordinary light motor car which is so familiar on our streets and country roads. During the late Balkan war every exploit of the new science of aeronautics was duly chronicled by the correspondents, but they had little to say about the employment of the motor car except incidentally in connection with their own personal adventures. General Beyers, however, states that the motor car was used extensively, and he predicts that the time is not far distant when its use will be general in times of war and civil disorder. Difficulties in the way of rough roads are certainly not likely to prove a more serious obstacle in South Africa than among the Balkan mountains and valleys, if the descriptions given by travellers in these parts are to be relied upon. He proceeded to give a few examples of the services that could be rendered by motorists in their own cars. It must be admitted that the definite organisation of the Automobile Reserve as a part of the Citizen Force is necessary, and it must participate in peace manœuvres. Motorists welcome the proposal, not merely as giving them a special place in the nation's organisation for defence, but also since the development of the use of the motor car for military purposes will give them fresh ground for urging on the Government the necessity for good roads throughout the country. South Africa, with its immense area, cannot expect to get all at once " roads like those of England and the Continent "—though General Beyers thinks that the time is not far distant when it will—but there is obviously vast room for improvement.

Warning Posts.

It will be remembered that in May last a petition was drawn up by the Natal Main Roads Improvements Association, praying that the Provincial Council should take immediate steps to repair the thoroughfare between Maritzburg and Durban, and also asking for the erection of warning posts at the danger points on the road. The petition was duly presented to the Council on June 9, and on June 25 Mr. Lewis Byron, the member for the Umbilo Division, moved that the matter be referred to the Executive Committee for favourable consideration. It is gratifying to be able to state that the Provincial Secretary has now written to the President of the Main Roads Improvement Association informing him that the Executive Committee have agreed to make provision for the repairing of this road in the draft estimates for next year, and that the Engineer Superintendent has been instructed to furnish a full report upon the necessary improvements. The Engineer has also been asked to arrange with the Natal Automobile Association in regard to the erection of danger signals at suitable points along the road. There has recently been considerable adverse comment upon the state of this main road, and residents and visitors alike will be pleased to learn that a progressive move is at last being made.

The Motor Ordinance.

The Motor Car Ordinance passed through Committee on Tuesday; the report stage is set down for Friday, and it will then only remain for the Administrator to fix a date upon which the Law will come into operation. An amendment, proposed by the Administrator, was carried, whereby one-third of the annual licence fee for motor vehicles taken out in municipal districts will be handed over to the Provincial Council; all other fees in connection with the Ordinance will go direct to the Council.

Rooikop Abandoned.

The following letter to Sir T. Cullinan is published in terms of section twenty-two, sub-section (b), of Act No. 35 of 1908 by the Mining Commissioner:—

Re Mynpacht No. 227, Rooikop No. 15: In terms of section twenty-two, sub-section (b), of the Precious and Base Metals Act, No. 35, 1908 (Transvaal), I hereby demand payment at my office of the sum of one hundred and fourteen pounds ten shillings sterling (£114 10s.), being the amount due in respect of Mynpacht No. 227, on the farm Rooikop No. 15, mining district of Johannesburg, for the year commencing 14th day of February, 1913. In default of payment of this amount within three months from the date of the first publication of this demand in the *Union Government Gazette*, the Mynpacht Brief will be declared cancelled.

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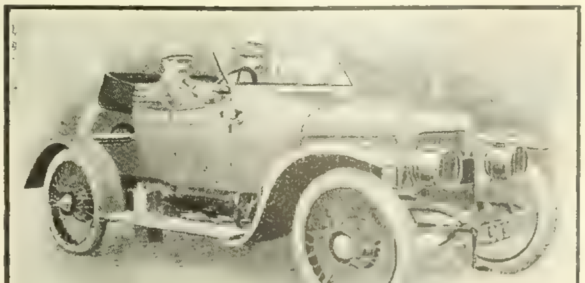

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QUARTERLY REPORTS.

Luipaardsvlei Estate.

The report on operations at the Luipaardsvlei Estate for the three months ended the 30th of June states that 2,577 feet were driven, risen and sunk during the period. The ore developed was 70,773 tons. The mill and works crushed and treated 52,530 tons, from which 13,492·361 ozs. of gold were obtained. Revenue from gold amounted to £56,602, or 21s. 6·607d. per ton. Working expenditure absorbed £48,713, or 18s. 6·561d., which left a profit on working for the three months of £7,890, or 3s. per ton. Sundry revenue brought in £3,039, making a total for the quarter of £10,929. A sum of £165 was expended on capital account, and there is a credit of £451 on development account. The ore reserves at the 30th of June are given at 550,844 tons.

Village Main Reef.

The report for the three months ended the 30th of June of the Village Main Reef embraces the financial position of the company as at the 30th of June as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £33,157; investments at cost, £192,342; and cash at bankers and value of gold in transit, £266,394. The liabilities are: Sundry creditors on account of loans, unclaimed dividends, stores, wages, Government tax, etc., £61,570; dividend No. 25, £165,200; and the balance brought from appropriation account is £383,179. Working revenue and expenditure account received from gold realised £196,781, or 34s. 8d. per ton milled. Working expenditure absorbed £106,866, or 18s. 10d. per ton, which left a working profit of £89,915, or 15s. 10d. per ton. A profit of £2,527 from treatment of accumulated slimes was made, and sundry revenue brought in £12,367. There is a charge under Miners' Phthisis Act Fund of £1,571, which left £103,238 carried to appropriation account. The balance of working expenditure and revenue account brought forward to the 31st of December was £377,240, and for the last six months ended the 30th of June, £204,697, making a total of £581,937. The charges against this sum are: Government tax (estimated) for six months, £17,886; French tax, £3,572; income tax, £12,100; dividend, £165,200; and the balance, £383,179, is carried to the balance sheet, as stated above. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 275. The reef disclosures were as follows:—Main Reef Leader: Distance exposed, 181 feet; width, 6 inches; assay value, 97s. 7d. South Reef: Distance exposed, 21 feet; width, 15 inches; assay value, 120s. 5d. The tonnage crushed was 113,400 tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 35s. 10d. The total yield was 46,738 ozs. fine gold, and the total yield per ton was 34s. 8d. Operations for the quarter ended the 30th of June resulted in a tonnage of 134,337 tons being mined, a decrease from the previous quarter of 8,209 tons. The tonnage milled, however, only decreased by 3,940 tons, due to 15·9 per cent. being sorted, as compared with 17·8 per cent. in the March quarter. An increasing proportion of the ore is being won from reclamation. 26·7 per cent. of the total rock mined during the quarter was obtained from reclamation, as compared with 26 per cent. for the previous quarter. 275 feet of development work were accomplished, of which 202 feet were sampled and valued at 102s. 7d. over 7 inches. Estimated payable tonnage of ore exposed by drives, etc., for the six months ended the 30th of June: South Reef, 1,000 tons, valued at 24s. 3d. per ton. With reference to the labour disturbances which have recently occurred on the Witwatersrand, and which ultimately resulted in the temporary suspension of milling operations by all companies, it is satisfactory to record that the employees of this company, though they ceased work, had no grievances and only came out in sympathy with strikers on other mines. The following is a brief outline of the state of affairs at the mines during the early days of July: On the 2nd of July a voluntary ballot of workers, in which about 80 per cent. voted, was held, and resulted in six votes to one declared against the strike. On the 3rd, fifty-two underground employees, mostly members of the Miners' Union, and acting under instructions therefrom, gave 24 hours' notice. On the morning of the 4th July all surface hands turned to and 130 underground men, and a full shift of natives were lowered, but did not work full time, as on account of the state of affairs in Johannesburg the management deemed it advisable to withdraw all men from underground. At different periods of the day the property was visited by gangs of strikers, who prevailed on men to stop work, the mills and reduction works being closed down at 1 p.m. Under the impression that men were still working, a large body of strikers and hooligans visited the property during the afternoon of the 4th, and, notwithstanding the presence of police, did a trifling amount of damage. Work would have been resumed on Monday evening, the 7th of July, but great difficulty was experienced with the natives, who assumed a truculent and menacing attitude, which was only quelled by the presence of mounted police and regulars. Here again the company's native employees had no grievances, but, having been informed that the white men had struck for higher wages, which was not the case, felt that they were justified in following their example. Normal conditions prevailed underground on the 8th inst., but the mills did not run fully till 10 50 a.m. on the 10th. The complement of this company is 3,638 natives, of which we had 2,757 on the 30th of June and 2,715 on the 20th of July.

Wolhuter G.M. Co.

The report for the quarter ended 31st July, 1913, states: Working expenditure, £81,474 0s. 11d.; per ton, 18s. 10·842d. Profit for quarter, £28,480 19s. 0d.; per ton, 6s. 7·297d. Revenue, £109,954 19s. 11d.; per ton, 25s. 6·139d. The capital expenditure for the quarter was as follows:—Shafts, £3,054 6s. 8d.; buildings, machinery and plant, etc., £7,110 5s. 0d.; total, £10,164 11s. 8d. No allowance has

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For 1,300lbs. Working Pressure.

STOCKS IN JOHANNESBURG AND DURBAN.

been made in the above statement for the Government [illegible] on profits. Ore developed or exposed during the quarter (includes ore mined from development): Assumed payable tonnage: Deep level, 53,304 tons, assay value 5·64 dwts., over 57·3 ins.; east incline, 11,110 tons, assay value 7·27 dwts., over 64·6 ins.; mynpacht, 7,655 tons, assay value 5·25 dwts., over 47·6 ins.; total, 75,369 tons, assay value 5·91 dwts. over 57·3 ins. Assumed unpayable tonnage: Deep level, 6,931 tons, assay value 2·43 dwts., over 50·8 ins.; east incline, 2,187 tons, assay value 3·80 dwts., over 53·0 ins.; mynpacht, 5,964 tons, assay value 2·33 dwts., over 41·2 ins.; total, 15,082 tons, assay value 2·59 dwts., over 46·8 ins. The payable ore reserves at date are:—783,546 tons, valued at 6·29 dwts. over 51·1 ins. The machinery and plant continue in good working order. The new 38 drill electrical compressor and necessary air pipe line has been completed, and is working satisfactorily. The majority of the white employees working underground came out on strike on the 4th July, but returned on the 8th July, when work was resumed on a normal scale. All operations were suspended during the interval, but no damage was done to the property.

Ferreira Deep.

The report for the three months ended the 30th of June of the Ferreira Deep embraces the financial position of the company as at the 30th of June as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £40,380, and cash at bankers and value of gold in transit, £448,908. The liabilities are: Sundry creditors on account of loans, dividends, stores, wages, Government tax, etc., £124,920; and the balance brought from appropriation account is £395,556. Working revenue and expenditure account received from gold realised £362,323, or 42s. 10d. per ton milled. Working expenditure absorbed £167,089, or 19s. 9d. per ton, which left a working profit of £195,234, or 23s. 1d. per ton. A profit of £1,221 from treatment of accumulated slimes was made. There is a charge for sundry expenditure against this working profit of £697, and under the Miners' hthisis Act Fund of £2,633, which left £193,125 carried to appropriation account. The balance of working expenditure and revenue account brought forward from the 30th of September was £125,105, and for the last nine months ended the 30th of June £531,124, and forfeited dividends £15, making a total of £656,244. The charges against this sum are: Amalgamation expenses, £1,610; Government tax (estimated) for nine months, £50,075; interim dividend, £245,000, and the balance, £359,556, is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The amount of capital expenditure for the six months ended the 30th of June (£3,691) has not yet been appropriated. The amount to be transferred from appropriation account will not be determined till the end of the financial year, and after it has been decided what dividend is to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 2,942. The reef disclosures were as follows:—Main Reef: Distance exposed, 35 feet; width, 39 inches; assay value, 8s. 5d. Main Reef Leader: Distance exposed, 911 feet; width, 38 inches; assay value, 76s. The tonnage crushed was 169,030 tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 44s. 5d. The total yield was 86,027 ozs. fine gold, and the total yield per ton was 42s. 10d. The development footage for the quarter shows an increase of 652 feet. No. 1 incline was sunk 118 feet during the period, a portion of this footage exposing leader of good value. The crosscut on the 12th level to develop the claims south-east of the Grahamstown dyke made good progress, and the 12th level main drive advanced 10[illegible] feet [illegible] £20,900 was earned from current treatment, due to an increase of 8,920 [illegible] of the richer ore from the deep shafts, and the mining of the rich shaft pillars at the No. 2 outcrop shaft, which has now been closed down. An amount of £1,524 was expended on capital account, and it is estimated that a further sum of £7,999 will be required to complete the work already authorised. During the strike period the general disposition of this company's employees was one of loyalty to the company. The general opinion was that the subject of the trouble on the Eastern Rand should not be made the reason for a general strike. At the men's request a ballot to decide for or against striking was taken on the 2nd of July; 89 per cent. of the total men available voted against ceasing work. The mine was visited by some of the strike leaders at the conclusion of the ballot, and a meeting was held at which endeavours were made to reverse the result arrived at by the men. The attendance, however, was small, the majority of men by reason of their absence making it clear that they did not wish to reconsider the decision. The men turned out as usual on the morning of the 4th of July, but, at a meeting held in the change house, it was decided not to go to work. No animus was displayed against the company or the management, nor had the men any complaints or grievances. This company's property is situate within a very short distance of the scenes of riot and incendiarism in Johannesburg, and threats were made that if the employees remained at work the mine would be the first to be visited by the crowds congregated in the town. As the men were not satisfied that there was adequate police and military protection to allow them to go on with their work in safety, they promised to leave the property quietly and not to interfere with the pumping. By the middle of the morning the whole of the men engaged in the workshops were called out and informed the management that they considered it safer for the property that they should obey, though the course taken was contrary to their inclinations. It was decided to hang up the batteries on the 4th of July, and bring the natives out of the mine. The engine drivers stuck to their posts throughout, and large numbers of natives went underground on Monday, the 7th inst., but no hoisting was done. The mills restarted on Monday at midnight. Normal conditions existed on Tuesday, the 8th inst. No trouble was experienced with the natives, but this company, in common with others of the Rand, is suffering from a serious shortage of labour, more especially as all tropical natives have been removed. On the 31st of March 3,956 natives were in our employ. This number was reduced to 3,589 at the end of June, and during the first twenty days of July a further wastage occurred of 183.

Haenertsburg Mining Activity.

A Pietersburg correspondent of *The Star* writes:—"The advent of the railway is going to bring about a vast change in the mining prospects of this district. In the Klein Letaba area there are several properties which show excellent assays and have not been worked for twenty years. The drawback has always been the high cost of transport, it being as much as 9s. per 100 lbs. To-day from Munnik the rate is 2s. and from Tzaneen 1s. 6d. I may state that in 1893 the old Letaba mine crushed four thousand tons of ore in the Birthday battery, and recovered over an ounce to the ton—some say as much as four ounces. That the old tailings on some of the mines are now being treated with the cyanide process and yielding four to six pennyweights will show what can be done. A correspondent states that a strike has been made showing thirty ounces to the ton, and the rock in places is plastered with visible gold. Gold is found from the surface downward and no large sums are involved in striking payable rock. In the old days the hauling was done by two oxen. A cyanide plant and battery are being installed on the Freda mine, near Marabastad. Mr. Eklun, of Pietersburg, is quite optimistic in regard to this property. He is at present working it."

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Associated Chambers of Commerce.

The following is the list of important resolutions submitted by the Johannesburg Chamber of Commerce to the eighteenth annual congress of Association of Chambers of Commerce, held at Kimberley :—

(1) *Trading in Locations.* -(Transvaal Precious and Base Metals Amendment Bill). That this Congress objects in principle to any trading, whether by Europeans, native or coloured persons, being carried on in locations or bazaars established within municipal areas or within a distance of one mile from the border of municipal areas.

(2) *Workmen's Lien.*—That in the opinion of this Congress legislation should be enacted providing that workmen should have a lien for wages for two weeks on any unpaid amount owing to the contractor.

(3) *Weekly Payment of Wages.*—In the opinion of this Congress it is in the interests of workers and the commercial community that all wages should be paid weekly.

(4) *Conciliation Boards. Industrial Disputes.* That in view of the recent industrial disputes, it is, in the opinion of this Congress, desirable that legislation should be promoted for the formation of conciliation boards on which employers and employees should have equal representation, such representatives being elected by ballot, with an independent chairman, and for courts of arbitration having power to enforce their awards.

(5) *Acceleration of Mail (European Service).*—That in the opinion of this Congress the present arrangement of the European mail service results in the greatest inconvenience to commercial and banking houses in several parts of the Union, and in order to obviate this, the Congress urges on the Government to call on the contractors under the Ocean Mail Contract to accelerate the mail service from Southampton to Capetown, and considers the increased subsidy, under Clause 32 of the Contract, will be justified.

(6) *Illegal Sale of Liquor.*—That this Congress considers the illegal sale of liquor to natives to be a great menace to prosperity throughout the Union, and urges the Government to consider and adopt all reasonable means for the suppression of this traffic.

(7) *Registration of Businesses.*—That this Congress reaffirms its opinion that legislation should be enacted making it compulsory to declare and register the names of all partners of firms trading within the Union and the Transvaal Registration of Businesses Act should be the basis.

(8) *Insolvency Law.*—That in the opinion of this Congress it is urgently desirable to establish uniform legislation in regard to the Insolvency Laws of the four Provinces and provide better protection to creditors by enacting the Bill prepared for the Union.

(9) *Codification of Divergent Laws.*—That this Congress reaffirms its opinion that it is desirable in the general interests of South Africa that legislation should be passed by the Union Parliament codifying the divergent laws of South Africa, more particularly those dealing with the estates of deceased persons, companies, weights and measures, and patents and trade marks.

(10) *Prevention of Corruption.*—That the Congress takes immediate steps to urge upon the Government and members of the Legislative Assembly the necessity of a Secret Commissions Bill for the Union.

(11) *Resolutions Adopted by Electrical Section.*—That this Congress favours the further extension of the Government telephone system wherever practical throughout the Union, especially in the direction of increased facilities to small towns and farm houses, and suggests that rates might be considerably reduced by a further extension of the party-line system.

That the establishment of a fully-equipped Weather Bureau for the purpose of receiving reports and disseminating weather forecasts would be of great advantage to farmers and shippers

That the practice of South African Municipalities to require independent sureties for the performance of contracts is a hardship, and that it is in many cases unnecessary, especially so whenever the supply of goods forms the principal element of the contract.

(12) Resolutions adopted by the Produce Trade Section (for the conference with the General Manager of Railways as well):

"That the Railway Authorities (Administration) be requested to make provision for the weighing of all produce, such as grain and fodder, at sending stations, and be responsible for such weights at destination stations."

"That tenderers for maize contracts be allowed to tender on Government grader's sample numbers of the season, instead of sending in samples."

"That grain be accepted for export in full bags, irrespective of weight, provided that all other conditions are observed."

Pretoria Cement. The following important circular has been handed to the National Federation by the Public Works Department, and is published here for general information: "*Cement manufactured by the Pretoria Cement Co., Ltd.* It is hereby notified that after the 1st October next no cement of the above manufacture will be accepted for use on P.W.D work unless the bags in which it is contained bear the Departmental lead seal stamped with the initials P.W.D., and the date of bagging. It may be explained that the Department tests certain large quantities of the above cement at the company's works from time to time, and, subject to the tests turning out satisfactory, the cement is bagged in the presence of a departmental officer, who affixes the seal in question. It must be clearly borne in mind, however, that the affixing of the departmental seal is merely a guarantee that the quality of the cement, when bagged, was up to the specified standard. The Department has nothing to do with the subsequent sale or handling of the bags, and the Department is therefore in no way bound to pass cement, merely by reason of the bags bearing the seal in question, should the condition be in any way defective. (A sample is enclosed of the seal temporarily used for the first parcel of cement passed by the Department. The seal of all subsequent parcels will, as above mentioned, also bear the date of bagging.) —G. G. Herdman, for Secretary for Public Works."

The Bettington Boiler.

The Johannesburg Municipal Council, at its meeting on the 14th March, 1910, accepted the offer of Messrs. Fraser and Chalmers to erect a "Bettington ' boiler, capable of evaporating normally 34,000 lbs. of water per hour, the conditions being that if, after a six months' trial run, the boiler proved satisfactory, the Council would purchase the boiler at the tendered price of £5,060. Owing to various causes, such as modification to the original design and change of original site, the six months' trial run had to be postponed for a considerable time. The General Manager now reports, with regard to this boiler, as follows:—"My report should have been in nearly twelve months ago, but the delay has been due to structural alterations, etc., which had to be carried out before I could regard the tests on this boiler as being satisfactory and complete. Accordingly, a number of alterations have been made by Messrs. Fraser and Chalmers, the representatives of this boiler for this country, and, from a practical point of view, the boiler is satisfactory, although if a new type of this boiler were to be made in future there would be slight alterations in the design which would improve it. With regard to its efficiency, a series of very careful tests have been carried out, and the abnormally high thermal efficiency guaranteed by the manufacturers is not borne out in practice. I have, however, made very careful comparative tests on the boiler efficiency, showing the relative value of the Bettington boiler with the best type of boilers in existence, and, everything considered, it is not less efficient than any other known boiler. With regard to the running properties of this boiler, it has distinct advantages in a station of low load factor, such as the Municipal Power Station of Johannesburg, in that it can be brought up to full steam pressure on the steam range from dead cold in about one-quarter of the time of any other boiler I am acquainted with, and another of its great advantages is that the running costs of the boiler are comparatively low. Taking everything into consideration, I have no hesitation whatever in recommending the Council to purchase the boiler." The Council adopted this recommendation, and an amount of £5,060 was voted for the Bettington boiler installed at the Power Station, in accordance with the tender of Messrs. Fraser and Chalmers.

The Opstal Diamond Syndicate, Ltd., has been formed in Benoni with a nominal capital of £12,500, to acquire from Mr. P. Coetzee, of Eloff, Transvaal, the option and notarial contract held by him from Isaak D. du Plessis, and embracing the farms Oude Opstal and Oude Opstal Annexe, now known as Oude Werf, Philipstown Division, containing one thousand one hundred and sixty-six morgen and on which diamondiferous ground has been proved to exist. Samples of the diamondiferous breccia are on view at Benoni.

Vryheid Railway Coal and Iron Co. The report of the Vryheid Coal and Iron Company for the year ended January 31st, 1913, states that after allowing for depreciation and providing for interest on debenture issue and loan, the result of the year's trading shows a profit of £1,338. Considerable increase in traffic is expected to result from the Government extension from Piet Retief in the Transvaal, now under construction, and joining the company's line at Tendega. It is shown in the general manager's report that the output for last year showed a decrease of 6,027 tons, owing to scarcity of native labour; but results for the current year are decidedly better. Coal remains an entirely satisfactory feature, its high quality being now thoroughly established and advanced contract prices having been obtained for the current year.

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Notes and News.

"Johnnies" Report.

Those interested in the Johannesburg Consolidated Investment Company are to be congratulated on fairly satisfactory results for the year ended 30th June, despite the adverse market conditions which ruled during most of the time. Profits are only £6,000 down at just over £201,000. The carry-forward is slightly increased to £168,400. A word of hope as to the Rand outlook is timely. Provided there is no recrudescence of the white labour trouble, the directors of the "Johnnies" Company are of opinion that "the prospects of the Rand have never been brighter, and this particularly applies to the majority of the mines under the company's control."

* * * *

Nickel in Madagascar.

In a memorandum to the Société des Ingenieurs Civils de France, M. Bonnefond, Chief of the Service of Mines of Madagascar, says that a deposit of garnierite, said to be extensive, has been discovered by an English company near Ambositra, near the east coast of the island. Some of the ore carries 7 to 8 per cent. nickel, but the average tenor will probably not be over 3 to 4 per cent. About 10 km. distant there is a waterfall, which could be made to give 10,000 h.p. for the operation of the mines. The ore mined would have to be carried down the river to Manonjary, which is a poor port, as vessels cannot approach within 4 km. on account of shoals. The estimated cost of transporting and loading the ore is 65 to 70 fr. per ton; freight to Marseilles or Havre, 55 to 60 fr. The deposit is on a high plateau, 1,300 m. above the sea level.

* * * *

Tin and Copper Outputs, Sales, and Shipments.

Although the output of copper by the South African mines last month was a good one, 1,514·2 tons (367·2 tons containing 46·4 per cent. metal from the Transvaal and 1,147 tons containing 46·13 per cent. metal from Namaqualand), the sales and shipments were only 169 tons, value £4,380, as against 524 tons in July and 3,796 tons in June. This large decline is, of course, due to the fact that no copper was shipped by the Namaqualand companies during the month. As to tin, the Transvaal last month produced 294·99 tons of 69·98 per cent. value, and the Cape 4·778 tons of 75 per cent. metal. The Transvaal sold and shipped the whole of this output, which realised £35,600, whilst the Cape sold and shipped 11·4 tons, which sold for £1,496. For the Union of South Africa the sales and shipments of cassiterite for the month were worth £37,096 as compared with £35,473 in July.

* * * *

Our Collieries and their Outputs.

The effects of the recent strike are to be noticed in the statistics published by the Government Mines Department of the Union of South Africa of coal output in the four Provinces. Thus for the State as a whole the July production was the largest on record, but the output for last month marks a large decline: over 55,000 tons. No doubt the fall in the August tonnage and value is in a not inconsiderable measure due to shortage of railway trucks, whilst the July return was increased by heavy orders from individual householders as well as mining and power companies, who laid in extra supplies in anticipation of a prolonged period of industrial confusion. In the Transvaal the July output was 461,212 tons which had a pit's mouth value of £102,719 (4s. 5·17d. per ton), whilst the August return was 420,484 tons of value £92,792, or 4s. 4·96d. per ton. There were in the Transvaal 29 productive collieries, of which 15 were situated in the Middelburg area and which sold 326,037 tons for £72,131. In Natal [illegible] collieries were producing last month and these raised 217,547 tons of saleable coal which realised just over 6s. per ton. The Cape sold 5,808 tons for £3,369, or 11s. 7·21d. per ton, and the Orange Free State 46,389 tons for £12,582.

Indian Uses of Gold.

To the ordinary uses to which gold is put the natives of India add a number that are curious. According to the bullion report of Messrs. Samuel Montagu & Co., gold in the form of thin leaf is swallowed in India for medicinal purposes. A frequent form of piety is to regild the dome of religious buildings; such operations can easily absorb £50,000 or more. Sovereigns with a shield on the obverse are in constant request. An inquiry as to the ultimate use of some thousands of pounds revealed the curious fact that a Rajah of rococo tastes had imported them to form a centre to each pane in the windows of his palace. As a contrast to the savings of France, which are utilised to promote the trade of the world, those of India are buried or hoarded.

* * * *

The "State Mines" Mill.

The engineering departments of the Johannesburg Consolidated Investment Company are busily engaged in completing plans and designs for the new 50,000 tons per month plant of the Government Gold Mining Areas property on Modderfontein. The main details of the installation have been decided on, but a few minor yet important details remain to be settled, and until these have been worked out it is not possible to give a full description of the equipment. The mill, as already stated, will be of back to back design and will be laid out with a view to extension to crush and treat a much larger tonnage than that which will be dealt with in the first instance.

* * * *

The Union's Mining Capital Statistics.

Attached to the report of the Mines Department of the Union of South Africa for last month is an interesting table of capital statistics of the mining enterprises of the Union as at the end of last year. The statistics treat of 203 gold mines, 13 diamond mines, 26 collieries and 35 base metal mines in the Transvaal, 36 mines in the Cape Colony, 30 in the Orange Free State, and 28 in Natal. In regard to the Witwatersrand statistics are brought forward in respect of 115 mines classified according to 41 producing dividend-paying, 21 producing non-dividend-paying, 9 developing and 44 not working properties, the total net issued capital of which is £60,788,198. Particular interest attaches to the debenture statistics. The total issue of these since inception of the companies concerned amounts to £12,686,213, and the net amount outstanding £8,491,708. The total net issued capital of all gold mines in the Transvaal is stated at £70,562,493, and the net amount of outstanding debentures £8,689,810. The issued capital of the diamond mines is £527,012, debentures none; of the coal mines £3,896,277, outstanding debentures £322,187, and of the base mineral mines £1,654,127, outstanding debentures £273,206. The Cape Colony diamond mines had a total capital at the end of the year of £5,917,548 in issue, and outstanding debentures £1,649,175.

* * * *

The Ventilation Problem.

Elsewhere in this issue we print an interesting criticism by Mr. G. H. Blenkinsop of present-day artificial ventilation methods on the mines of the Rand, read before the Chemical, Metallurgical and Mining Society last Saturday night. We have heard criticisms of the paper to the effect that fan ventilation removes the fine dust from the mine. This is admitted, but it is contended that the effect is not until after the air containing the fine dust has traversed throughout the mine and has been breathed by the workers. It is not generally recognised that very fine dust—and it is the very fine dust that causes injury to the mine workers—is extremely difficult to precipitate or deposit. Spraying will cause the coarser particles to deposit but it will have very little effect on the very fine dust. In metallurgical works where the fine dust from smelting furnaces carries appreciable values of different metals a great many devices are used with only partial success. The devices are large dust chambers in which there is a quiescent zone, jets of steam and fine sprays of water in the dust chambers and flues filtering the gases from the furnaces through bags and the discharge of electric sparks in the dust chambers and flues. A fortune awaits the man who can satisfactorily solve the problem of the precipitation of very fine dust. It is also objected to Mr. Blenkinsop's proposal that air from a blower liberated at a working face will raise dust. Mr. Blenkinsop contends that this belief arises from a misunderstanding. The air from the blower is brought to the working place at a pressure of from half to three-quarters of a pound in, say, a 2 in. pipe having an area of 3·14 square inches; to end of this pipe is fitted on a bell-shaped mouthpiece six feet long having a diameter at the mouth of 9 inches or an area of 63·61 inches, so that the pressure of the fresh air at the mouth of the outlet is very slight. The air pipe is of course near the roof of the drive or other working. In the case of a drive having the dimensions of, say, 7 feet by 5 feet, or an area of 5,040 inches, it will be readily understood that there is no draught by this means of ventilation. In mines where this system of ventilation is in use it is found that there is not any indication of a draught or current of air but that the fresh air diffuses itself throughout the workings and gives a decidedly pleasant feeling. It should be mentioned that the current of air produced by fan ventilation travels about 16 feet a second, or, say, 1,000 feet a minute, and not only keeps very fine dust in suspension but it also raises dust in dry places. Against Mr. Blenkinsop's scheme it is also said that the horse power required to force air from a blower to the working places is enormous. This belief, it is pointed out, must be owing to the misconception that a blower requires as much power as a compressor which delivers air at a pressure of 70 or 80 lbs. per square inch. A Root's blower delivering 35,000 cubic feet of air per minute at a pressure of three-quarters of a pound per square inch requires 140 h.p. (see Messrs. Fraser & Chalmers, Ltd., catalogue of Root's blowers) plus 60 h.p. to overcome friction of air in pipes. This is a total of 200 h.p. For three blowers the h.p. would only amount to 600 h.p., and not 2,000 h.p. as we have heard stated. The paper is a technical one written for technical men, but the subject being one of general interest we think more details might have been given. There are features in this system of ventilation which will naturally occur to engineers but are not apparent to the general reader. We assume it is proposed to work the blowers continuously and that there will be a constant influx of fresh air into the mine. By the law of diffusion of gases this fresh air will penetrate to all the open spaces in the mine which will act as storage reservoirs. It is apparent, therefore, that the quality of the air throughout the mine will improve. This will occur rapidly during the time that operations are suspended daily and will be very marked during the week end stoppage. In other words, during the hours when the workers are not in the mine this system of ventilation will be providing a reserve of good air.

* * * *

The Native Labour Supply.

The Reuter South African Press Agency states that the Director of Native Labour has been in communication with Magistrates in order to investigate the reports that have appeared in the Press indicating that the recent industrial upheaval on the Witwatersrand and statements to natives as to the probability of a further strike alleged to have been made subsequently by white miners, are having a deterrent effect on the outflow of native labour to the mines. In reply to the queries addressed to these officers as to how far the Press statements may be regarded as correct, answers have been received from over forty Magistrates of the more populous native districts of the Cape Province (proper), the Transkeian Territories, Natal, and Zululand, and the Transvaal, which show that they are unanimously of the opinion that the supply of native labour from these districts at the present time is in no way being affected as alleged. On the contrary, many Magistrates state that the only obstacles are those usual to this season of the year, namely, the possession of native beer in abundance, and the advent of the ploughing season, which in certain areas has been accompanied by good rains. The Director of Native Labour considers that the information furnished him by the Magistrates warrants the opinion that when these obstacles, which are only temporary in their nature, have been removed, a steady inflow of native labour may be expected.

Rhodesian August Output.

The Rhodesian gold output for August was declared at 59,555 ozs., of the value of £250,576, an increase on the preceding month of 287 ozs., value £1,274, and the second largest output on record. Other minerals were as follows:—Silver, 11,777 ozs., value £1,243; asbestos, 79 tons, value £1,427; coal, 20,494 tons; chrome ore, 11,712 tons, value £26,143; diamonds, 89¾ carats, value £471; lead, 25 tons, value £446.

* * * *

Union Finances.

The statement of revenue received by the public Exchequer which is published in the *Gazette* makes most satisfactory showing. In the majority of revenue items there has been in the five months ending August 31st a substantial yield in excess of the estimate. Customs have already produced about £95,000 more than the estimated quota; Excise has produced £50,000 more than the estimate; Stamps, sundry licences, Succession Duties, Forests and Crown Lands, have all yielded handsome surpluses on the five months' proportion of the estimate. In Postal revenue there is a decrease of about £22,000, but this may be made good during the closing months of the year. The revenue sources which have failed to come up to the estimate are few. As regards mining revenue, the receipts from the taxation of diamond profits have already amounted to £507,000, which is £57,000 better than the estimate for the whole year, and if we assume that in regard to the other revenue heads—mining taxation, native taxation, licences, and so forth—the estimates are realised, there seems no reason to doubt that General Smuts' original estimate of £15,389,000 for the total receipts of the whole year will be improved upon by half a million sterling.

* * * *

Price of Diamonds.

The price of diamonds is again being discussed at the various diggings, and there appears to be something wrong about the prices being offered on the south-western fields. The buyers assert that, owing to the action of certain American firms, the price of diamonds has gone down 25 per cent., whereas the latest American newspapers refer to diamonds as firm, with an upward tendency. This drop in prices has given rise to a desire to reduce the wages of natives employed on the diggings, and, in order to prevent natives from dodging from one digger to another in quest of the present wages of from 15s. to 20s. a week, efforts are being made to bring about a general reduction on all diggings.

* * * *

Electric Blasting.

Elsewhere in this issue will be found an interesting article on Electric Blasting, from the pen of Mr. E. J. Moynihan, who has taken a leading part in the agitation for shot firing by electricity as a means of improving health conditions in the mines. Mr. Moynihan states the case for blasting by electricity clearly and concisely, and in his elucidation of the various minor problems which have to be considered in connection with the introduction of electric shot firing on the Rand he shows himself familiar with the details of the method. He does not, for instance, lose sight of the fact that in some cases the nature of the hanging wall must be an important consideration. This article, however, does not dispose of all the criticisms that have been made against the system. For instance, it is difficult to understand how shots can be counted from surface either by means of underground telephones or any other device if the full breaking effect of the blast is to be obtained and the holes are fired simultaneously. The terrible consequences of drilling into a misfired hole have been luridly brought home by the lamentable accident at the Crown Mines on Wednesday, and it is clear that the risk of increasing accidents of this kind must be taken into vital account. For the rest Mr. Moynihan's article must be allowed to speak for itself. It is a thoughtful contribution to the discussion of the main object of blasting from surface, *i.e.*, that the men may be absent from the workings during the time the dust is at its worst.

TOPICS OF THE WEEK.

LABOUR AND COLOUR

The speech made by Sir Lionel Phillips at the dinner of the Society of Certificated Mechanical Engineers last Saturday night has been generally construed as a plain and timely warning to the white miners of the Rand to think again before they are led away by Labour extremists. It is true that many familiar aspects of the industry were dealt with in the speech, such as the all-importance of mining to the country, the folly of attempting to turn phthisis-stricken, work-shy miners into farmers, and the inadequacy of the return to oversea shareholders represented by the small proportion of the present gold output exported in the shape of dividends on invested capital. But plainly these issues were regarded by Sir Lionel and his audience as merely subsidiary to the big question of colour and labour, which he handled with such frankness and courage. For it takes a brave man to tell the Rand white " worker " the blunt, unpalatable truth; and warnings that are wont to be disregarded if coming from chairmen of Chambers of Commerce or ourselves, and dismissed as " academic " and " mere theorising " cannot so lightly be disregarded when coming from so prominent a spokesman of the industry and so experienced a public man as Sir Lionel Phillips. The issues so plainly stated by Sir Lionel have been recently raised in these columns, but without the detail or authority with which he invested his treatment of them. He began by showing that the system of employing black labour with white overseers was not cheap, despite the fact that cheap production was vital to a country's progress. Statistics showed that the supervisor was paid six and a half times as much as the man who was the actual labourer. " I do believe this," said Sir Lionel, " that you will have to have something like a nearer ratio between the labourer, supervisor, and the skilled man, than the ratio that exists to-day. I think that we have been unconsciously more or less to blame for the system that has been allowed to grow up." Coming to deal with the question of efficiency and costs, Sir Lionel said: " Although I may be charged with having suggested a reduction of wages, in order to increase the profits of the mines, I do not believe we are getting that utmost efficiency to-day by any means. If we are to maintain the superiority of the white man in this country, he must actually be superior, and he must not place himself on the same footing as natives in any shape or form." Misguided people have been inciting Kafirs to do certain things, and of them Sir Lionel said: " They are destroying the ascendancy of the white man, they are dealing a blow at their own position in this country. If you are going to have the white man placing himself on the same level as the native, that will mean the end of the colour bar in this country. It must, of necessity, result in there being no distinction as to a white man and a coloured man in the work he is permitted to do." He dwelt on the fact that in the past certain classes of work have been reserved for white men in this country, and for the reason that it is necessary to maintain the status of the white man; but if the white man did not rise to the occasion, he said, " the whole thing would go." Another great aspect to which he called attention was the question of fairness to the native. " The time was bound to come," he said, " when they must allow men —regardless of the colour of their skin—to avail themselves of such capabilities as they might have, and to rise in any branch of skilled work in which they were engaged. This had got to come, whether they liked it or not, and he might here draw attention to what was done in Panama. The Americans made no distinction. They worked one white man to four natives, but the natives in the Canal were allowed to do anything their capabilities rendered possible. They had native carpenters, fitters and so forth, but in the competition the skilled white man was absolutely holding his own, as he always would if he were obliged to do so." Sir Lionel doubted very much whether this sort of spoon-feeding, this attempt to bolster up the white man by special conditions, was good for the white man. It was bad for him, because it was a blow at his efficiency. In competition, he believed, a white man would win every time, because he was put on his mettle. In thus coming forward and publicly warning the white employees on the Rand, Sir Lionel is performing a duty as necessary as it is, doubtless, distasteful. Nothing, of course, is to be gained by reluctance to recognise the facts of the case. Sir Lionel Phillips has now put them on permanent record, and in words chosen with such obvious care and deliberation that they must arrest the attention of the most thoughtless. It is satisfactory to note that the effect on the discussion of labour questions on the Rand has already been of a salutary and mollifying nature.

THE MINISTER OF MINES ON THE INDUSTRIAL POSITION.

The annual dinner of the Society of Certificated Mechanical Engineers last Saturday night was the occasion of a speech of unusual importance from the Minister of Mines. The week before, at Kimberley, the Secretary for Mines, Mr. Warington Smyth, had adumbrated the intentions of the Government in regard to industrial legislation generally, and this statement was supplemented by the Minister on Saturday night with particular reference to the mining industry. By way of introduction, Mr. Malan reiterated the resolve of the Government to repress at all costs disorder in industrial disputes, and he paid a warm and well-deserved tribute to the behaviour of the military and police during the recent strike. Moreover, he acquitted the mine directors of any desire to aggravate the present unemployment and admitted that, on the contrary, extraordinary efforts were being made by those in authority to absorb the white unemployed. He expressed sympathy with the men who were out of employment, but showed that it was one of the sad consequences of the strike that had to be faced. He spoke from knowledge when he said that it was the intention of the mine-owners to reduce as much as possible the evil consequences of the upheaval, as he had figures to prove that the proportion of white men employed to-day, as compared with natives, was larger than it had ever been, which showed that although there was a wastage going on in native labour, the proportion of white men employed was greater than formerly. The most important part of Mr. Malan's speech, however, dealt with the recognition of trades unions, and the qualifying conditions which it was the intention of the Government to embody in the coming legislation. In its anxiety to remove the causes of unrest the Government has decided to recognise the trades unions. Mr. Malan declared his belief that trade unions had come to stay. Wise men, he averred, would make the best of them, and repressive measures were of no use. That, he said, was why the Government was going to provide for the compulsory registration of such unions, and he believed the community would come to regard them as necessary in the social evolution of the country; not as secret societies working for an end that would not permit of the light of day. He thought it was a mere question of time when the employers would recognise the unions, and they would then have collective bargaining, which would lead to greater stability and peace in all industries. Mr. Malan, however, uttered a plain warning that the forthcoming legislation will not admit the claim of the Federation of Trades to interfere whenever a dispute arises in an individual trade or industry. "He did not think," he said, "that such a claim to be represented in discussions between employers and employed could be established. If they wished to make a collective bargain between masters and servants, the trades union should be represented, but they must not import general political considerations into the settlement of trades disputes." The objections to such a course are clear, and Mr. Hoy, the General Manager of the South African Railways, gives a case in point in his annual report, where he shows that the representatives of a section of the railwaymen put forward claims on behalf of other classes of railwaymen whose conditions they did not fully understand. The administration agreed to the proposal, but its application led to an immediate agitation for a reversion to the conditions previously ruling. Such a case shows that community of interest, even within the comparatively narrow limits of the railway service, does not necessarily exist. It is all the more likely to be absent when the Federation of Trades attempts to dictate terms to trades and industries, of whose conditions it knows nothing. Mr. Malan further made it clear that the new legislation will lay down that strikes shall not be proclaimed until a ballot has been taken. This has been proved by recent unfortunate experiences to be a most necessary provision in the interests of the men themselves. From this it will be seen that the Government is moving along sound and progressive lines. The recognition of the trades unions which it deems essential to future industrial peace is to be conditioned by (a) non-interference on the part of an autocratic outside political junta of interfering Trades Hall busybodies, and (b) by insistence on the fact that there shall be no resort to the final arbitrament of strikes without the consent of the majority of the members of the union affected. If the Government be successful in carrying out this programme the result promises to be the restoration of permanent industrial peace which must benefit alike the worker, the industry and the country.

THE COAL INDUSTRY AND THE SOUTH AFRICAN RAILWAYS.

Considerable light is thrown on the recent controversy between the General Manager of the S.A.R. and Mr. Alexander Aiken, representing the coal owners, by Mr. Hoy's annual report for 1912, issued last week. The total amount of coal consigned from the various collieries of the Union during 1912 was 7,942,343 as against 7,482,201 in 1911. Since the year 1909 the total output has increased by 1,909,856 tons, equal to 31·7 per cent., or, expressed in another way, the output of the coal mines of South Africa during the three years immediately subsequent to Union has increased by 6,216,697 tons, or 38·8 per cent., as compared with the output during the three years prior to Union. The total tonnage of coal for export and bunkering carried at the export coal rate was 2,092,496 tons as compared with 1,935,913 tons in 1911, an increase of 156,583 tons, or 8·1 per cent. Mr. Hoy admits that notwithstanding the large increase in the engine and truck supply, the greatest difficulty has been experienced at times in meeting the demands of the collieries. At the majority of the Transvaal coal mines, he says, there are no storage bins, as at many mines in Natal, while the majority of the gold mines possess storage capacity for only two days' supply of coal. With no less than 4,600,191 tons of coal forwarded from the Transvaal collieries during the year the unbounded confidence displayed by both gold and coal mines in the ability of the Administration to provide for uninterrupted transport will be appreciated, but the General Manager expresses the opinion that if the mines would do a little more to assist themselves by the provision of storage accommodation it would facilitate matters considerably. With reference to the shortage of truckage in Natal, caused by the delays to wagons under load with coal at Durban, the General Manager reports that a very considerable improvement has been effected in this respect. There is still much room for improvement, but the colliery owners now appear to be impressed with the necessity of introducing arrangements which would result in the more expeditious release of the stock, and there is every probability of an agreement with this object being arrived at shortly. To further develop the coal trade it is recognised as essential that an adequate supply of trucks should be maintained, but Mr. Hoy contends "it is unreasonable to expect the Administration to supply trucks to be utilized for the storage of coal awaiting arrival of steamers." Mr. Hoy anticipated the recent criticism by setting out very clearly the case for the S.A.R., as made familiar by the recent controversy. It is to be hoped that the conference which is being held as the result of the ventilation of the question will have favourable results and finally settle all the points of disagreement.

THE SEARCH FOR THE IDEAL STOPE DRILL.

Reconsideration of Many Points Advisable—The Urgent Need of the Industry—Question of Underground Drill Sharpening—Machine Drills and Insecure Ground.

The recent strike naturally brought a host of industrial difficulties in its train, and by far and away the most important of these is the shortage of native labour. Everything humanly possible is being done to arrest the flow of labour away from the mines and to run the mills as near their full capacity as possible. But the loss of a good many thousands of boys during the last few months means a very serious handicap to the industry, and unless inventive talent can devise further means for the substitution of mechanical agencies in the place of manual labour, operations on the Rand for some months to come are bound to be materially restricted. Shortage of native labour has always been a very particular and disagreeable *bête noir* of the Rand and never has the adverse influence of native labour shortage been more acutely felt than at present. The controllers of the industry, consulting engineers and managers, and the public in general all alike feel that the time is fully ripe for a supreme effort to minimise the evil effects on the whole community of an unstable native labour force. And the channels in which thoughts most easily run are those which lead to solution or partial solution of the great problem by mechanical means.

New Devices.

In a great and progressive industry like that of gold mining on the Witwatersrand the last and final word in regard to general practice, metallurgical, mechanical or electrical plant can never be spoken. New methods, new devices are continually coming forward, and it can safely be asserted will continue to come forward. Each new installation erected on the Witwatersrand represents, in some particular, an advance on the previous latest plant. The Rand's is a kaleidoscopic industry. Fresh problems are continually arising and demanding solution and new methods and new devices are constantly being brought into practice to meet the exigencies of new situations. Labour shortage is certainly no new situation, but in the light of the advance of engineering knowledge during the last few years the methods by which the effects of that shortage can be combatted may be said to suggest new methods of solution. Never was the need of the ideal stoping drill—efficient light, and economical—more keenly felt than it is on the Witwatersrand to-day. The stope drill competition inaugurated by this journal and the similar contest promoted by the Chamber of Mines at a later date were each productive of most valuable results. But it must not be thought that the data they produced were intended to hold good for all time. Since those contests were decided there has been much learned in regard to the manufacture and capabilities of rock drills suitable for breaking ground in narrow or medium sized stopes. All the world over mining labour is scarce at present, and in both hemispheres the great cry of mining is for the ideal small drill. Several new types of machine drills have been invented of recent years, and not a few of the older types have been modified and improved. There are one or two makes of machines which have been doing excellent work in Europe and America for some time past and which have never yet been given a fair trial under proper working conditions on the Witwatersrand. Considering the enormity of the issues at stake every effort should be made to determine whether these machines are suited to the hard conglomerate of the Main Reef series.

Machines and Treacherous Stopes.

There is a fresh circumstance to be considered in connection with the requirements of the machine ideally adapted to Rand conditions, a circumstance which at the time of the stope drill competitions referred to above did not enter much into calculations. Each year mining on the Rand is carried on at a greater depth and on a larger scale than in the preceding year. The net effect of these two developments acting in conjunction with natural stratigraphical weakness in some localities is that in certain mines the hanging wall is decidedly treacherous, so much so that despite careful timbering and packing, the employment of machine drills in some of the stopes of these properties is fraught with very considerable risk. One or two large mines on the Central Rand are at present seriously affected in this manner. They are short of hammer boys, and since machines cannot be substituted for native drillers in some of the stopes underground operations are very considerably handicapped. At one important proposition the situation in this regard is so serious that the mine will probably have to be closed down very shortly. The necessity for the advent of some machine drill of light pattern which will deliver a quick but not too heavy blow to break ground in stopes where the hanging wall is not too strong suggests itself as an urgent need. The proposition from a mechanical point of view is a difficult one. Numerous light machines have of recent years been experimented with, and whilst some of these have done very good work for a time a serious failing of practically all of them has been that after a certain amount of use they have been found too light to "stand up" to their work. But there are, as has already been remarked, several drills which have been evolved during the last few years and have done good work elsewhere and which have not yet been practically tested on the Rand. Surely a searching and practical examination of their merits would be worth the while.

Detachable Bits.

Another direction in which investigation might well be extended is in regard to detachable bits. One of the "immediate demands" submitted to the Government by the Transvaal Federation of Trades Unions was that drill sharpening underground should be abolished, and to this the Chamber of Mines replied: "It is agreed that before any drill sharpening is performed underground a certificate must be obtained from the Inspector of Mines to the effect that the working place is sanitary and well ventilated." Whether below ground drill sharpening is continued or not the work has in the past not been any too efficiently performed and the invention of an effective detachable bit that would give a good rigid cutting edge would be of tremendous value to the industry. A little while ago there were two or three local inventors busy on this appliance, but of late very little has been heard of their devices.

Another Competition or an Exhibition?

In conclusion one is almost tempted to enquire whether the time is not ripe for another stope drill competition and enquiry—a competition and investigation more comprehensive than its predecessors which would bring up to date the latest work of the numerous rock drill manufacturers of the world and would constitute an up-to-date examination of the whole question of the substitution of mechanical means for manual labour underground dust-allaying attachments, detachable bits, quality of steel, the best type of machines for stoping in the presence of insecure ground, etc., etc. Perhaps these matters could be better elucidated by an exhibition than a competition. At any rate the needs of the industry in regard to that much-sought piece of mechanism, the ideal stoping machine, are so urgent that a consideration of ways and means for bringing local knowledge of the various points enumerated above right up to date seems a very desirable thing.

It is only fair to state that there are one or two light drills in the local market which fall very little short of the desired machine, and which, with a few trifling improvements may realize that high ideal.

POSITION AT THE JUPITER.

Closing Down Contemplated—The Rand's Deepest Mine.

THE Jupiter is understood to be on the point of closing down. An official statement on the position of the mine is being prepared setting forth the reasons for the step contemplated. The Jupiter is the deepest mine on the Rand, and is one of the two or three deepest gold propositions of the world. At the end of last year the Jupiter was working at a depth of 5,040 feet.

PRESENT UNDERGROUND POSITION.

It has never been a very successful concern, and the recent strike and the aftermath of the strike have proved the last straws for the company. The profit of £9,659 earned in respect of last month's operations was exceptional in that during August no fresh rock was broken nor was any new development work undertaken. Throughout the month the mill was supplied from rock previously broken, which only had to bear the cost of tramming and hoisting. Operations at the Jupiter have been greatly hampered of late through shortage of native labour. There has been a marked scarcity of hammer boys, and since the hanging wall is, in a number of stopes in the mine, insecure the use of machine drills on a large scale as a means of overcoming the labour shortage is deemed impracticable, or at any rate inadvisable. Ventilation conditions and the temperature of the air, too, leave a great deal to be desired, and, taking all circumstances into account, nothing remains for the company but to suspend active operations until such time as improved conditions prevail.

RECENT RESULTS.

The Jupiter G.M. Company was registered in 1896, and in 1907 acquired by fusion the property of the adjoining Simmer and Jack West. Up to the end of last year the money expended by the Jupiter on capital and extraordinary expenditure amounted to £1,048,602. Having regard to the working depth and the low grade of the ore reserves (the estimated fully developed reserves at the end of 1912 were 1,270,000 "mine" tons of an average value of 4·4 dwts.), an increase in working profit of over £30,000 for last year over the results for the previous twelve months was accounted very satisfactory. This improvement was effected by reducing the cost of working by no less than three shillings per ton. The recovery value was lower by 2s. 4d., but the resultant improvement in profit of 8·24d. per ton combined with an increase of 161,800 tons in ore milled enabled the mine to earn a substantially larger aggregate, and to distribute £50,710 (5 per cent.) amongst shareholders in the form of dividends. In connection with this company's report, the outstanding features, in addition to the decline in costs and improvement in profits, were (a) declaration of ore reserves on a different basis to that previously adopted; (b) the decision to increase the capacity of the plant. As to the first the report of the directors stated:—It will be noticed that in the superintending engineer's report the values of the ore reserves are given as mine grade instead of, as in previous years, milling grade. The reason for this change is due to the fact that previously in arriving at the milling value of the reserves, a 10 per cent. sorting allowance was provided for. Your engineers advise that experience indicates that it is not practicable to sort up to this extent. It is therefore felt that to continue giving a milling grade of the ore reserves might be misleading to shareholders. In view of the falling off in values as shown in the development carried out during the year, your Board have decided to increase the capacity of your crushing and treatment plant up to 60,000 tons per month, whereby it is anticipated that working costs will be reduced to a figure which will enable ore of a mine grade of 4·1 dwts. to be treated profitably. On the subject of development Mr. C. D. Leslie, the superintending engineer, remarked:—The ore developed during the year was of less average value than that of the existing reserves, but this should not be regarded as particularly discouraging, since most of the development for the period was on Main Reef where values are known to be below the average, and crosscut raises therefrom to develop the Main Reef Leader may prove the existence of ore of increased value.

Since the date of that report the situation in the mine has, it seems, become less and less satisfactory. The strike marked the crisis in the company's affairs, and now instead of any suggestion of increasing the equipment the decision has, we believe, been arrived at to temporarily close down the mine.

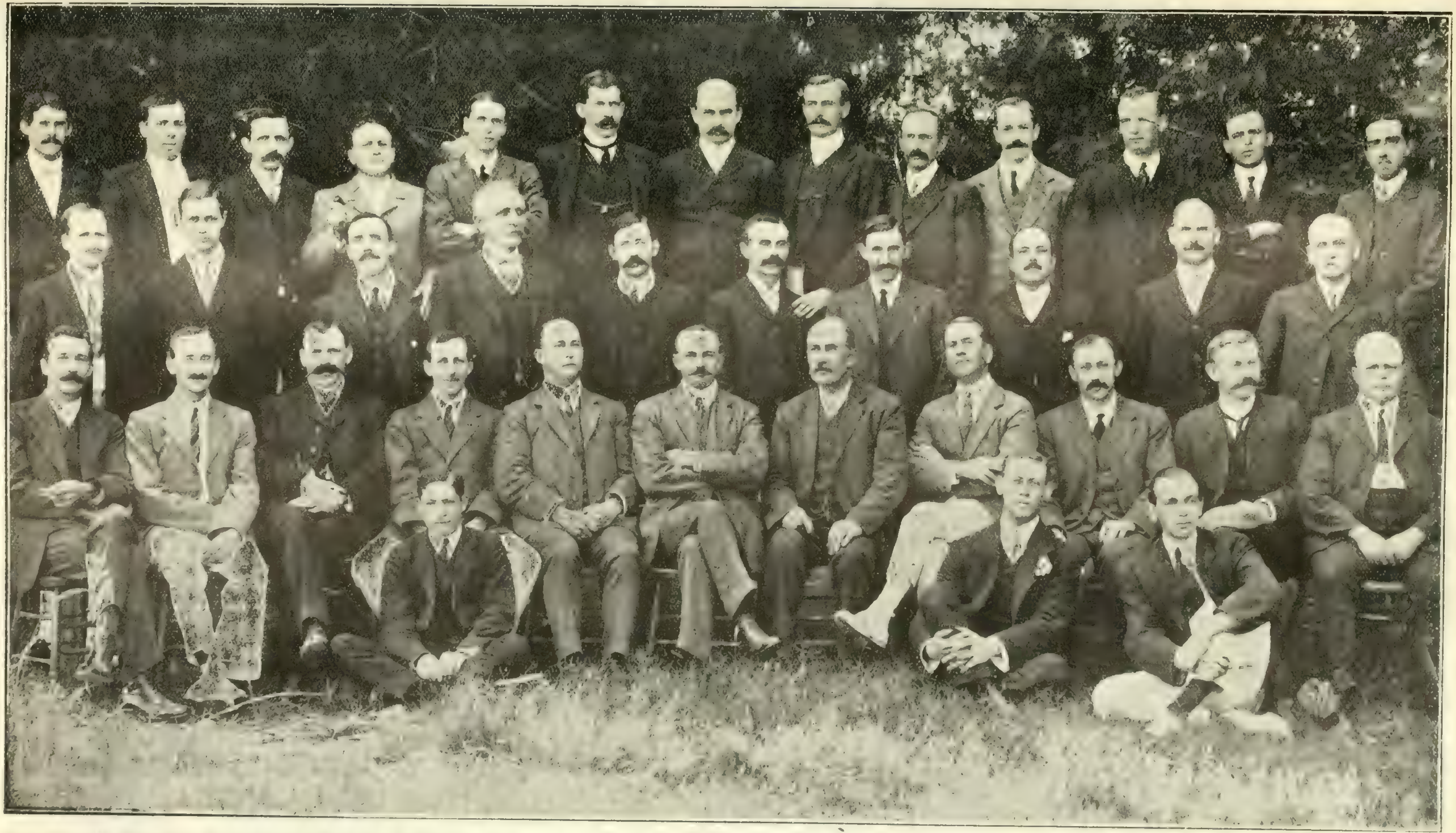
A RECORD YEAR WITH THE CONSOLIDATED MAIN REEF.

Points from Annual Report.

IN his annual report Mr. D. Wilkinson, consulting engineer of the Consolidated Main Reef Mines and Estate, Ltd., states that mining and milling operations of the past year constitute a record in the history of the company both as regards the tonnage milled, the gold output, and the profits obtained. The following comparison indicates the improvement in the results as compared with the year ended June, 1912:

1912: Tons milled, 242,416; total yield, £350,423; yield per ton milled, 28s. 10.93d.; cost per ton milled, 21s. 1.74d.; profit per ton milled, 7s. 9.20d.; total profits, £94,134. 1913: Tons milled, 266.055; total yield, £407,255; yield per ton milled, 30s. 7.37d.; cost per ton milled, 20s. 1.61d.; profit per ton milled, 10s. 5.76d.; total profits, £139,415. There has been an increase in the yield of 1s. 8.44d., a decrease in costs of 1s. 0.13d., an increase in the profit per ton of 2s. 8.57d., an increase of 23,639 tons in the ore milled; and of £45,281 in the profits obtained as compared with the previous year. The footage driven, crosscut, raised and sunk amounted to 15,125 feet, or 3,068 feet less than the previous year, of which decrease 2,883 feet occurred in the eastern section. The assay results obtained were satisfactory in the western and central sections, but, as the development in the eastern section continued to give poor results, many of the drives were stopped, and hence the decrease in the footage driven in this section. The payable tonnage developed and exposed during the year is estimated at 185,050 tons of an average assay value of 7.2 dwts. over a stoping width of 48 inches. Of the 307,844 tons mined, 128,791 tons were obtained from reclamation work, development rock, and from blocks not included in the ore reserves. The estimated ore reserves at June 30th were 614,470 tons, of an average assay value of 7.32 dwts. over a stoping width of 48 inches, showing an increase of 3,790 tons, and an improvement in grade of 0.06 dwt. This result must be considered satisfactory, in view of the decrease in the east section reserves and the limited number of faces on which driving could be done in the western section during the past year. The reef was cut in the vertical shaft in January at a depth of 2,365 feet, near the horizon of the 23rd level, and gave for 110 feet sampled around the shaft an average assay value of 17.5 dwts. over an assumed stoping width of 48 inches. This shaft is situated on practically the central line of property, and, although this result cannot be taken as typical of the reef values in this section, it is very satisfactory. In order not to retard sinking operations, the development at this level was postponed, pending the completion of shaft sinking. This is now finished, and the stations at the 20th, 21st, 22nd, 23rd, 24th and 25th levels are also nearing completion. Cross-cutting will be necessary before the reef is cut at all these levels, but the whole of this should be accomplished during this financial year, and, in addition, there should be a considerable exposure of reef during this year on the 20th, 22nd, 23rd and 24th levels. In order to hasten the development of the western section, and to provide adequate ventilation as soon as possible in the lower levels by connecting with the vertical shaft, the sinking of the west shaft will be continued south of the Ferreira Dyke by means of an electric hoist placed at the 21st level. During this financial year the mine will thus be in a favourable position for opening up reserves in the lower levels. There has been considerable expenditure during the past year in improving the ventilation and in the arrangements of the water service for dust-laying, and the mine is now, from a health point of view, in a most satisfactory condition.

MANAGER AND STAFF OF THE PRINCESS ESTATE AND GOLD MINING COMPANY, LIMITED.



Bottom Row (left to right): W. G. Beck (paper clerk), D. Hassett (shorthand and typist), E. P. Cowles (surveyor).

Front Row (sitting): W. Beaver (reduction officer), B. C. T. Selby (mine captain), D. McKenzie (mine captain), H. R. H. [illegible] (general manager), H. A. Rorke ([illegible] secretary), P. [illegible] Anderson (general manager), J. A. Hills (engineer), Dr. S. M. Dickson (medical officer, benefit society), F. J. van Aardt (mine captain), E. H. E. Kramer (electrician), H. F. [illegible] ([illegible]).

Middle Row: A. Lilley (mill foreman), W. E. Thorpe (assayer), J. Corrigan (shiftboss), W. A. D. Russell (hospital superintendent), W. C. [illegible] (shiftboss), J. M. [illegible] ([illegible]), T. S. Lewis (foreman fitter), J. A. Andrew (foreman smith), R. Hope Bourne (assistant mine secretary), F. H. Neave (timekeeper).

Top Row: R. J. Orr (shiftboss), T. Moss (shiftboss), W. J. Noble (shiftboss), J. A. [illegible] (assistant surveyor), J. Cosgrove (assistant sampler), O. [illegible] (assistant storekeeper), C. [illegible] (assistant timekeeper), P. G. Harris (hospital superintendent), C. D. Richardson (cyanide foreman), E. T. Ward ([illegible]), P. Rankin (assistant [illegible]), J. W. Gilbert (sampler), J. S. Wilkinson (storekeeper).

Photo: R. Oliver.

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VENTILATION OF THE MINES OF THE RAND.

The Problem of Obtaining Healthier Conditions—Some Criticism of Present Methods, and a Constructive Proposal.

[By G. H. BLENKINSOP, M.Inst.M.M.*]

THE report of the Commission on Miners' Phthisis and Pulmonary Tuberculosis, 1912, states on page 22: "The problem of prevention still awaits solution. . . . . The experience of the past few years has shown that the prevention of disease is a very complex and difficult problem. Although the main principles involved—an adequate supply of efficient general and local ventilation of fresh air to all working places and the control of dust by means of water are universally understood and accepted, the detailed application of these principles in the elaboration of the best practical methods to secure the ends in view has proved to be far from a simple matter. During the last three or four years, as we have already stated, much attention has been devoted by those responsible for the control of mines to the question of mine ventilation. . . . This important work should effect a considerable amelioration of underground conditions. Detailed attention is also being everywhere increasingly paid to dust control by means of water." Since the date of this report mine ventilation and dust control have effected a further amelioration of underground conditions, but the problem of prevention still awaits solution.

In this paper I propose to examine in detail local conditions and, if possible, to ascertain why a system of ventilation which fulfils practically all requirements in Europe fails to attain the desired result on the Rand. As compared with Europe we have a much higher daily mean temperature, a susceptibility to pulmonary complaints owing to the high altitude. Our methods of mining are different, inasmuch as we have in the mines large worked-out open spaces to which Kaffirs have access, and so make it extremely difficult, if not impossible, to keep the mines in a sanitary condition. These open spaces in some mines are being filled with sand residues, but it will always be practically impossible while Kafirs are employed underground—and the employment of white labour instead of Kafirs is not at present within the range of discussion—to reach the sanitary standard of European mines. Further, the mines in Europe in which the system of fan ventilation has proved effective are nearly all coal mines, and the problem there was to remove the excess of carbon dioxide, carbon monoxide, and other dangerous gases. Dust in coal mines and soft rock mines does not affect health conditions as in the hard rock mines of the Rand. Fan ventilation is capable of keeping the percentage of carbon dioxide, carbon monoxide and the gases generated by the explosion of the gelatine within the limits required by the Mining Regulations, and it is also able to reduce the very high temperature which obtained on the mines of the Rand when they depended solely on natural ventilation. It is scarcely necessary to say that a current of air through mine workings—especially when it is charged with moisture—although it may feel cool, does not mean decreased temperature or decrease of impurity. Fanning oneself in, say, a theatre gives a cool feeling, but it does not lower the temperature of the place nor decrease the impurity of the atmosphere. Assuming that all difficulties connected with the fan ventilation of the mines of the Rand, such as the tendency of air from the downcast shaft to take the least line of resistance, which would be the most direct route to the upcast shaft; that the current of air from the downcast shaft can be diverted to ventilate the stopes and large worked-out spaces so that the latter shall not become breeding places for dangerous bacilli; that doors, wood stoppings and brattice cloths shall always be in order—brattice cloth is particularly liable to destruction by the acid water of the Rand mines—assuming that all these difficulties are overcome, does fan ventilation fulfil all the requirements of the Rand mines? My answer to this query is that it does not. The temperature of the air passed through the mine workings by means of fan ventilation will on the Rand be above the limit of safety, and it will also contain a lot of the finest particles of dust which are carried in suspension for the reason that the air from fan ventilation has to traverse a long distance underground before it reaches the working places. A large percentage of the dust produced by drilling, blasting and shovelling has been allayed by the carrying out of the regulations for the allaying of dust, and a further improvement will be effected when, as is probable, electric firing from the surface becomes general. Still it will be practically impossible to allay all the fine particles in suspension and even a very small quantity of dust is dangerous when contained in air of high temperature. Ventilation by fan tends to dry a mine as it removes an enormous quantity of water as moisture in the air, and therefore it will cause very fine particles of dust to be in suspension notwithstanding the use of sprays, etc. The temperature of the air breathed by the mine workers, and also the amount of moisture contained in it, are important factors in determining the health conditions of the Rand mines. At this high altitude all residents are more susceptible to pulmonary complaints than those living at a lower altitude; this applies especially to workers underground, whose lungs are subjected in the ordinary course of their occupation to more strain than those working at the surface. The Mines Medical Inspector, Dr. S. V. van Niekerk, M.D., in his report for 1912, states as regards native employees: "The disease which causes the greatest mortality is undoubtedly pneumonia, which in some months accounts for more than half the deaths." The Commission on Miners' Phthisis and Pulmonary Tuberculosis on Mines within the Union of South Africa, 1912, states: "A hot moist atmosphere has an injurious effect on persons working in it and consequently a lowered physical resistance to disease, and with an increase of temperature there is a corresponding increase in the amount of moisture the air can carry." Underground mine workers on the Rand are, therefore, normally, owing to altitude and the temperature of the air in which they work, particularly liable to be affected by small quantities of dust in suspension in the air and any other impurities which the air may contain.

Mr. R. T. A. Innes, the Union Astronomer, has kindly favoured me with a table showing the temperature conditions at the Observatory. For practical purposes we can assume the temperature conditions at the surface of the Rand mines to be the same. The average mean daily surface temperature for the twelve months, July, 1912, to June, 1913, was 59·5 degrees F., and the average mean daily maximum temperature for the same period was 69·5 degrees F. To ascertain the mean temperature at which air from fan ventilation would reach mine workers must be added the increase owing to rock temperature. The minimum increase of rock temperature is usually put at 1 degree F. for every 220 feet of working traversed, but in the case of the Rand mines must be added heat produced by oxidation of pyrites, decay of timbers, etc. We shall be making a very moderate allowance if we place the increase of temperature at 1 degree F. for every 200 feet of mine working traversed. It will be within the mark if we assume an average distance of 6,000 feet traversed, or say an increase in temperature of 30 degrees F. before air from fan ventilation reaches the mine workers. The greater the distance air has to travel underground before it reaches the working places the greater will be the degree of impurity. The average mean daily surface temperature is 59·5 degrees F., this figure plus 30 degrees F. gives 89·5 degrees F. as the temperature at which air from fan ventilation would reach the mine workers. Of course temperatures taken at the bottom of a downcast shaft would give lower figures than this. Temperatures will vary in different mines. The New Zealand Safety Commissioners' report states that in some mines an increase of rock temperature of 1 degree F. was obtained for each 33 feet and 43·5 feet respectively. If there is an error in fixing the temperature at which air from fan ventilation would reach the working places after it has traversed a distance of 6,000 feet underground—this 6,000 feet includes both vertical and longitudinal distance—at 89·5 degrees F. it is that this figure is below rather than above the actual temperature. Authorities on ventilation state that injurious physiological effects begin to be produced when the wet bulb temperature rises above 75 degrees F. It has been laid down by Commissions in several countries, including the Phthisis Commission, 1912, that the maximum temperature should not exceed 80 degrees F. The maximum mean surface temperature at the Rand mines during the eight summer months is 74·0 degrees F., so that the margin between the day summer temperature and that at which injurious physiological effects begin to be produced on underground workers is very slight. Fan ventilation has produced an amelioration of former underground conditions, inasmuch as it has reduced the percentage of noxious gases and reduced the very high temperature which obtained in the mines of the Rand when they depended on natural ventilation. It has been shown, however, that air passed through the workings by fan ventilation absorbs so much heat, moisture, dust and dangerous gases and bacilli from imperfect sanitation that by the time it reaches the working faces it constitutes a great source of danger to those breathing it. Fan ventilaion certainly does not give "a supply of fresh air to all working places," and therefore does not solve the problem of prevention as set forth on page 22 of the report of the Commission on Miners' Phthisis and Pulmonary Tuberculosis.

I will now attempt to show how healthier conditions can be brought about in the mines of the Rand. If, instead of passing air for ventilation through the mine workings in the manner that is now done by fan ventilation, it were brought down in pipes from a pressure blower and liberated at the working places, the workers would have a regular supply of absolutely fresh air free from dust and noxious gases and bacilli and containing no greater amount of moisture than at the surface. In order to do this I propose to have at suitable places at the surface one or more blowers of the Roots' type. The particular type of the blower is not of consequence, provided it will give a definite pressure of, say, half or three-quarters of a pound. From the blower the air should be taken in suitable size pipes to air receivers or tanks at each station, and from these tanks or receivers it would be taken in small light pipes to the working places. The total cost of the installation would not be great, the figure would of course depend on the size of the mine. For a mine employing a total of 2,000 workers underground the cost would be less than £10,000. If at the working places there is a constant supply of fresh air the problem of obtaining healthier conditions will be solved and a big forward step taken in the direction of rendering underground work as healthy as underground work can ever be under the climatic conditions of the Rand. In a few mines on the Rand, such as the Crown Mines, which have a number of shafts connected by a wide and high main haulage way, a smaller quantity of fresh air per person at the working places will be necessary than in the case of mines having a lower standard of natural and fan ventilation and a smaller quantity of air passing through the main workings. In the case of mines having only one or two shafts and depending solely on natural ventilation, a system of ventilation such as I have described, which will take absolutely fresh air to the working places, is urgently required. It can be quickly installed and it is not costly.

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*Paper submitted at the monthly meeting of the Chemical, Metallurgical and Mining Society of South Africa.

In conclusion, I would quote from the annual report of the Mines Department, 1912: "If health conditions were improved, better men would compete for the comparatively high wages on the Rand; both white and coloured men would put in a better day's work, and it is reasonable to suppose that more intelligent men would tend to reduce the accident rate. If these arguments were considered insufficient from a humanitarian point of view, it might be further urged that improved health conditions, by bringing better and more efficient miners, might tend to actually reduce working costs and cause larger profits to be made. Working under unhealthy conditions the efficiency of the skilled miner must remain low, and a larger number of persons must be employed to do a certain amount of work than would be under normal conditions. As regards white miners, the skilled miner with all his faculties clear and in working order breaks more ground and uses less explosives than a mere labourer, and the difference between placing holes rightly or wrongly is very great indeed, and has a far-reaching effect, not only on the immediate output from the mine, but on the future cost of timbering and supporting weakened excavations."

THE SOUTH-WESTERN TRANSVAAL DIGGINGS' OUTPUT.

Bloemhof Still Heads the List.

The following is the official classified summary of diamonds recovered and sold in the South-Western Transvaal for the month of August. The fields named, together with several minor areas, make up a total of 7,467⅝ carats, at a value of £33,344 12s. 6d.

	Carats.	Value.
Bloemhof	1,651⅝	£6,891 3 0
Eerste Begin	1,123	5,254 0 0
London	636	3,039 5 0
Koppiesvlei	620	2,578 2 6
Rietput	452¼	2,437 5 0
Dievedraai	510¾	2,240 5 0
Eastleigh	355¾	2,108 10 0
Mooifontein	382½	1,255 5 0
Christiana	220¾	1,184 19 0
Avondster	274½	1,066 12 6
Kameelkuil	212¼	888 10 0
Panfontein	188¾	741 15 6
Maroetjesfontein ...	159½	653 0 0
Zwartlaagte	135½	587 15 0
Goedgenoeg	98	477 2 6
Zevenfontein	94¾	386 0 0
Modderkraal	49¾	344 10 0
Schweizer Reneke ...	68½	329 5 0
Kromellenboog ...	36¼	192 17 6
Johannes Rust ...	39¼	154 15 0
Vuurfontein	26½	121 0 0
Diamantdoorn	25	98 0 0

The total in value for August is lower than that of any month this year. The decrease in value is generally attributed to the decline in prices so much complained of. The returns for the past six months were as follows:—

	Carats.	Value.
March	8,917¾	£49,805 19 6
April	7,416	42,951 9 9
May	9,355½	58,472 3 0
June	7,252⅛	43,735 18 0
July	7,735	39,843 11 0
August	7,467⅝	33,344 12 6

WHAT THE SOUTH AFRICAN RAILWAYS BUY.

Details of the Principal Purchases Made in England and South Africa.

According to the annual report the year 1912 was an exceptionally busy one with the S.A.R. Stores Department, and the amount of business done considerably in excess of any previous year. The turnover was no less than £11,609,021. The distribution of the London payments was:—Great Britain, £1,883,043; America, £57,592; Canada, £79; Germany, £111,172; Belgium, £141,744; Holland, £75; France, £5,122; Denmark, £358; Norway, £3,968; Sweden, £20,588; Austria, £5; total, £2,223,746. Permanent, way, loco: spares, machinery, tools and chemicals were received from America; tools from Canada; permanent way, cement, zinc, tin, sugar, machinery, electrical material, glass, chemicals, paper and coke from Germany and Belgium; stationery from Holland; tools, chemicals and permanent way from France; cement from Denmark; timber from Norway and Sweden; and stationery from Austria. Owing to the troubles in the labour world, shipping strikes and other causes, considerable delay was experienced in obtaining supplies from Great Britain and the Continent. These delays caused serious inconvenience and considerable extra expense owing to local purchases at enhanced prices. This was particularly the case with cement, large purchases having to be made to keep important marine works, new lines, etc., from coming to a standstill. Local prices ranged from 8s. 9d. to 15s. per cask against contract prices averaging 8s. 7d. per cask.

Principal Purchases.

The following summary shows the principal stores received through the High Commissioner and purchased in South Africa during the years 1911 and 1912:—

	1911.	1912.
Bridgework	£15,194	£21,240
Brake Gear	23,280	17,065
Coal (Steam and Smithy)	394,407	420,282
Cement	61,159	83,715
Catering supplies	51,202	33,422
Copper	14,209	10,580
Coke	6,733	8,497
Drugs	3,863	4,996
Electric Gear	45,341	46,260
Explosives	9,947	12,972
Fencing Material	18,250	26,142
Forage and Provender	19,076	26,291
Iron—Bar, etc.	39,961	24,943
Iron—Galvanised Corrugated	18,155	18,496
Locomotive, Carriage & Wagon Spares	413,393	415,996
Live Stock	19,935	4,216
Machinery	23,096	36,405
Oils	75,119	78,054
Permanent Way Material	454,458	1,198,235
Provisions and Rations	172,164	181,454
Piping (all kinds)	18,190	18,447
Rolling Stock	381,708	532,640
Rope	7,979	9,134
Steel	32,151	31,203
Stationery and Printed Forms	50,572	79,875
Timber	209,109	201,161
Tarpaulins	9,592	2,619
Telegraph Material	6,251	8,071
Uniforms and Clothing	18,928	18,896
Varnish	7,719	5,582
Waste (Cotton and Wool)	13,200	15,588
General	623,710	1,038,185
	£3,258,051	£4,630,662
Ex High Commissioner	1,447,501	2,266,437
Ex Local Purchases	1,810,550	2,364,225
	£3,258,051	£4,630,662

MANICALAND MINING PROGRESS.

Points from the Quarterly Review of the Director of Mines.

According to the *Mining Journal of the Mozambique Company* the value of the Manicaland gold output during the last quarter of the year 1912 has shown a heavy decrease as compared with the previous quarter. This diminution, however, has been due to a merely temporary cause, namely, to the suspension of all crushing operations on the Bragança Mine during the period of construction of the new concentration and cyanide plant that has lately been erected on that mine. Now that the installation of the Wilfley tables and the tanks for cyanide treatment on the Bragança is completed, an increased output from this mine may be expected. As stated in the *Quarterly Review* of the last number, permanent full month crushings with the full complement of stamps of this mine will not commence until the beginning of the second half of 1913, but in the meantime crushing will take place during some of the months of the first half of 1913 or during a portion of some or all of these months. We may therefore await with some confidence an improved quarterly output for the first quarter of 1913. The smaller propositions taken by themselves show an increased output on that of the third quarter of the past year, the production for December of the Chimezi-Rhodes-Banket mine belonging to Mr. Dias Pereira being 72 ozs. 16 dwts. 14 grs. On the Bragança, on the 120 ft. level, the development footage at the end of December showed a total footage of 679 feet driven on the reef or some 214 ft, for the quarter under review. The sinking of the main shaft has also been continued and it has now reached a depth of some 240 ft. as which depth it is intended to lay out a second level. As the reef continues to be to the north of the shaft between the 120 and 240 ft. levels, in the same manner as between the surface and 120 ft. level, a crosscut will have to be driven at the latter level from the shaft to the point of intersection with the reef. On the Guy Fawkes mine, the work of unwatering and repairing the shaft has been continued and at the termination of the year 1912 the shaft and fifth level were unwatered and the sixth level largely so. As stated in our last issue, this work is being carried out by the proprietors of the mine, the Mozambique Macequece, Ltd., preparatory to handing over the mine on option to Mr. Charles Aubert in the terms of the agreement mentioned in Notes and News of our October number. In addition to the unwatering of the shaft, a considerable amount of general repair work has been done by the option holders with the consent of the Mozambique Macequece in different sections of the mine so that on taking over the property the option holders may be in a position to at once commence mining operations. During the quarter under review, the Welcome block of claims and most of the other adjoining blocks that formerly belonged to Mr. Whyte, of Durban, have been bought at public auction or re-pegged by Mr. J. Aguas and Dr. Lacerda, of Beira. As Mr. Aguas had already purchased from the former owner of the claims the machinery erected thereon, including the 5-stamp 1,350 lb. battery and a Tangye's gas engine, crushing will be commenced early in next quarter. Mining work on the Welcome property has already been begun. The prospecting of the Revue alluvials was continued during the quarter up to approximately the beginning of December, as the unusually dry weather that prevailed until the end of November allowed of alluvial prospecting being continued to a later date than usually would be practicable. The representative of the Andrade Mines has expressed himself as satisfied with the results of the season's work and a portion of the plant for the construction of the power-line to be erected between the Inhamucarara valley and the Revue has already been received. The race in the Inhamucarara valley which has a total length of some four kilometres has been completed and the course of the future power line surveyed and mapped out. Alluvial prospecting work has now been temporarily suspended until the end of the wet season, but, in the meantime, the erection of the Inhamucarara generating station and of the power-transmission line will be energetically pushed forward so that the projected commencement of dredging operations in the last quarter of 1913 may not be retarded.

POSITION OF THE MAIN REEF WEST.

Lower Grade—Higher Costs.

The following figures compare the results of the Main Reef West for the past year with those obtained during the financial year ended June, 1912:--1912: Tons milled, 185,781; yield per ton, 33s. 1·51d.; cost per ton, 21s. 10·85d.; profit per ton, 11s. 2·66d.; total profit, £104,240. 1913: Tons milled, 231,988; yield per ton, 30s. 1·24d.; cost per ton, 22s. 3·59d.; profit per ton, 7s. 9·65d.; total profit, £90,522. The tonnage milled, the consulting engineer states, has been increased by 46,207 tons, the yield has decreased by 3s. 0·27d., the cost has increased by 4·74d., the profit has decreased by 3s. 5·01d. per ton milled, and the total profits have decreased by £13,718. The cost of milling has increased by 8·74d., and development by 3·28d. The increase in the cost of mining is due to the necessity of doing a large amount of subsidiary development in the form of raises and winzes, in order to mine many small blocks which are isolated from the large blocks by faults. Excluding shaft sinking, stations and ore bins, the feet driven, crosscut, raised and sunk amounted to 12,901 feet, as compared with 10,836 feet during 1912. The development operations resulted in the exposure of 168,540 tons, of an average value of 5·8 dwts., the remaining tons exposed being unpayable. The ore reserves now stand at 591,830 tons, having an average assay value of 6·02 dwts., and thus show a decrease of 93,890 tons and a fall in average grade of 0·34 dwt., as compared with June 30, 1912. The facilities for development have been granted in the west section, and here the results generally have been much below expectations, for practically the whole of the western development has been low grade, a large percentage being unpayable. During the last three months, however, some better ore has been encountered in the 11th, west of the west shaft, the average assay for 150 feet sampled being 8·1 dwts. over an assumed stoping width of 48 inches. The poor results obtained in this section have necessitated the more rapid opening up of the lower levels. The 13th level crosscut is being driven as quickly as possible, and a small subsidiary incline is being sunk from the 11th level, which, on attaining the 12th level, will be stopped, and driving will be done from it on this level. In the east section the east incline is being sunk to the 14th level, at which point it should intersect the Ferreira dyke. Owing to a fault near this shaft, about 130 feet of cross-cutting to the footwall on each level has to be done to intersect the Main Reef Leader, causing a considerable delay in opening up the reef in this section. The value of the development on the 12th and 13th levels of the east and west sections will largely determine the maintenance or improvement of the ore reserves during this year. The development in the east section has so far shown a large percentage of payable reef, and the good values obtained in the 11th level, west of the west shaft, as compared with the development on the upper levels of the west section, indicate the probability of an improvement in depth of this section.

Mine Doors.

In some of the Southern Colorado coal mines a standard size for mine doors is adopted. The size naturally varies at different mines; however, the usual size door is 7 ft. wide by 6 ft. high. The doors are hung on concrete frames and covered with sheet iron. At the Cokedale works, double doors, 3 ft. 6 in. wide, hinged at each side of the entry, are used at the foot of steep grades. In case a trip or even a single car runs away on the slope, these doors, instead of being shattered as a single door would be, are opened by the impact of the car and it passes through them without destroying them. The idea in adopting a uniform mine door is based on the plan that when a door is of no further use in one part of the mine, it can be moved to another where a standard frame awaits it.—*Colliery Engineer.*

THE POSITION OF GLYNN'S LYDENBURG, LIMITED.

Report on Prospects and Life of the Mine by Mr. S. Aimetti.

It will be remembered that at the extraordinary general meeting of shareholders of Glynn's Lydenburg, Limited, held on 7th ultimo for the purpose of amending the articles of association of the company, the chairman, replying to an enquiry from a shareholder present at the meeting as to the life of the mine, stated that Mr. S. Aimetti, general manager of the Transvaal Gold Mining Estates, Limited, had been requested to visit and report upon this company's property, and that the report, when received, would be issued to shareholders. This report has now been issued simultaneously in London and Johannesburg, and is as follows:—

As requested, I paid a visit to the Glynn's Lydenburg Mine during the last few days. My investigations underground have been limited to that part of the old mine which is now being worked, and in which there is still an area of reef bearing ground which is not as yet developed. The Werf Mynpacht, which is the section to the Dip, has also been visited right through. Nearly all the development work in the Mill Hill is now carried out on its low section, on which the bulk of the mining, which has yielded such a splendid record, was done. Mr. Damant has just finished the calculation of the ore reserves for the financial year, and in this block of ground alone it is estimated that about 40,000 tons of an average value of 12 dwts. over 15 inches is now available, while perhaps an equal amount will be developed during the next two years. The most important feature, and the most pleasing, is that the value of these reserves from which most of the tonnage for the current year will be obtained, is of a somewhat higher value than the ore milled during the past year, the average recovery of which has been 10.25 dwts. In the top section of this Hill there are small rich blocks, estimated at 7,000 tons, valued 16 dwts., which are included in the above tonnage. The South Hill, which derives its name from its comparative situation to the Main Hill, has developed, on its top section, a very narrow reef of fair value, but, taken as a whole, the tonnage obtainable from this will be small. On the lower section of this Hill, for an area roughly 20 claims, although prospecting drives have been put in all round, the lode located has proved unpayable. In view of this, and considering the shape of this portion of the Hill, it is probable that this section may be dislocated, and it would be well to extend one or two drives further into the Hill, and then sink and rise normally to the strata, with a view of finding a more profitable lode. I have discussed this with Mr. Damant, who agrees with my suggestion. The Compound Hill, which is to the east of the Main Hill, contains a very narrow lode, which is of good value, but in irregular formation, and to this one must add the difficulties of transport to the mill; for this, special arrangements will have to be made. Mr. Damant estimates that about 9,000 tons, valued, roughly, at 10 dwts., will be available from this source. The Vergunning Claims, 78 in all, are adjoining the old Glynn's Extension, and a very large amount of work was done by that company, but with unsatisfactory results. The prospects of this area are, therefore, not promising, especially in view of the indifferent disclosures already obtained. The very extensive Werf Mynpacht, which is to the dip of the Mill Hill Section, or mine proper, is now being developed, but owing to the large amount of water met with, progress is necessarily slow. In order to investigate as far as possible the prospects of this section, Mr. Damant, Mr. Lea (who is his surveyor) and myself were enabled, through the courtesy of Mr. Millar, the manager of the Glynn's Pretoria-Lydenburg Syndicate, to visit their workings which adjoin this area, and it is very gratifying to have been able to ascertain that an excellent looking reef of good average thickness has been exposed in the narrow strip of ground belonging to that Syndicate. This is certainly a very encouraging indication of the possibilities which your very large Werf Mynpacht may contain, and, if one considers that the workings in this Mynpacht have already given fairly encouraging results, one must necessarily conclude that everything possible should be done to hasten the opening up of this very large portion of your mining area, which is reef bearing, but practically undeveloped. Up to now, in the small portion which has been opened up, the ore reserves are estimated at 8,361 tons, of an average value of 9.16 dwts., over 11.5 inches. The face of the boundary drive going south is now within 650 feet of the workings of the Syndicate, and a very large portion of your property may probably be included in the rich shute of which the Glynn's Pretoria-Lydenburg Syndicate forms part. Mr. Damant, who has secured about 150 claims for your Company to the south of the Werf Mynpacht, is now boreholing to prove the extension of the good reef in this direction. Boreholing in this ground will certainly present many difficulties owing to the broken and soft nature of the strata mixed up with all kinds of boulders, yet I cannot but approve of any effort which may be made to obtain any possible indication and prospect concerning this area. *It is in this area that your company has to look for its future*, and I feel that its development should be pushed on as fast as possible. I must, therefore, ask leave to lay emphasis on the fact that it is of the greatest importance that a *more than adequate* pumping plant should be provided for dewatering this area. If a pumping plant with spare pumps and motors were provided and kept ready for use at the main pumping station, it would be possible to expedite development and facilitate the mining of this section. It is also very important that the most advanced West Drive to the Dip should be pushed on as much as possible, and for this it is indispensable that a pumping plant consisting of duplicate sets and spares should be established at the most advanced point to the Dip, and provision made for properly equipped pump chambers as the drive advances. The prospects of your company may, in view of the foregoing remarks, be summarised as follows:—

Low Mill Hill Section	40,000 tons.
Compound Hill	9,000 tons.
Werf Mynpacht (Dip Section)	8,300 tons.
	57,300 tons.

This means that eighteen months' working may be reckoned on the ore reserves actually available at present. Add to this the probable amount that will be developed during the next eighteen months, and no great stretch of imagination will be required to assume that, at the worst, three years' operations are in view. In support of this, it must not be lost sight of that at any rate the Dip section will certainly develop a very large area of payable ground. This area may not be as rich as the average of the mine has been, but the encouraging results already obtained—especially by the Glynn's Pretoria-Lydenburg Syndicate—give one every reason to hope that this large portion of your property may still contain a bright and prosperous future for your company. The calculation of the ore reserves is made on reef tonnages, but one must not forget that reef tonnages are here practically stoping widths. The system of mining clean reef has been carried out, and, as practically no blasting is necessary in stoping operations, the method of packing in the stopes the waste which may be necessary to mine, is bound to give the best economical results. In all development, as far as I have been able to ascertain, there is no reason why all the drives and their connection should not be carried below the lode, so as to prevent breaking in to the hanging walls of the reef. Too much stress cannot be laid on this, as its advantages cannot be exaggerated. Besides greater economy in stope timbering, there is the advantage of more economically handling the ore downwards from the small stoping trucks into the larger trucks in the drive, and there is no doubt in my mind that more accessible drives, by reason of their height, will allow of better work being done and closer supervision being ensured. In the old mine, probably owing to the irregularity of the strata, some drives have been carried into the hanging wall, instead of the foot, but I am glad to say that in the more recent working in the Werf Mynpacht practically all the driving has been carried on in the foot. I have discussed this point with Mr. Damant, and I am sure he realises its importance. Before concluding my remarks, I would like to place on record the assistance given me by Mr. Damant in my investigations. He placed at my disposal all the information at his command, and in a most friendly spirit favoured me with his knowledge and experiences, thus greatly facilitating my work.

Cyaniding Copper-Bearing Ores.

A process for treating cupriferous gold and silver ores has been devised by John Collins Clancy, and he has been granted United States patent No. 1,057,936, covering its use. The process consists of subjecting the ore to the action of cyanide solution containing a soluble cyanamide, the functions of the cyanamide being to prevent the precipitation of copper upon the zinc at the same time that the gold and silver are precipitating. The process may be applied by adding any cyanamide—calcium cyanamide, for instance—to the solutions with which ores are treated. The mixture of ore and solution is agitated according to the usual practice, and solution is separated by some one of the usual means. The solution is passed over zinc shavings or dust to precipitate its metal contents, while the copper is held in solution by reason of the presence of cyanamide. This solution is used over and over again, or, if necessary, passed through an electrolyser to precipitate its copper contents. The amount of copper in the solution will determine the time when the precipitation of copper should be effected. The copper cyanamide solution is said to be an excellent solvent for the precious metals, as well as for copper compounds. The great virtue of this process, in addition to the avoiding of precipitating copper along with gold and silver, is said to be that by simple electrolysis all of the cyanide may be regenerated at a slight expenditure of current, due to the fact that copper is first precipitated on the anode as a black copper cyanamide. This copper cyanamide behaves practically as a copper anode and a low voltage is sufficient to transfer the anodic copper to the cathode, during which transfer regeneration of the cyanide takes place. In the treatment of copper sulphide ores the process works as advantageously as in the treatment of oxidised copper ores. It may be stated that a high-current density may be used in the deposition of the copper from the solution without destroying the solution, and at the same time cutting down the expense of large installations for electrolysers in the copper deposition.

ELECTRIC BLASTING.

Some Suggestions—Advantages Claimed for the Scheme.

[By E. J. Moynihan.]

The object of the introduction of electric blasting in hard rock mines is to eliminate miners' phthisis, in so far as it is caused by the dust arising from blasting operations. It is not claimed that electric blasting itself is at all new. The novelty lies in doing all the firing, after all the underground employees have left the mine, from the surface, or from stations—preferably from the surface. The workmen are thus saved from inhaling the blasting dust when it is thickest. They should not be allowed to return to the workings until the dust is settled or withdrawn from the mine by ventilating fans. In the former case, only one shift should be worked. The direct cost of the electric fuses is at present greater than that of ordinary fuse. Indirectly there are economies in the electric method, apart from those due to the lessening of mortality and the increased efficiency due to improved conditions. Since the miner has not to light his charge himself, the working time at the face for a given amount of work is reduced, or, alternatively, the actual drilling time for a given total working time is increased. "Chesa" sticks or torches, which are a material source of expense, disappear. Misfires, with proper management, are largely eliminated. Gassing accidents and premature explosions of charges, with their related costs of compensation, are also greatly reduced. The general adoption of the electric system might also allow of more effective methods of settling the dust, which are only practicable when all the men are out of the mine. It might, for instance, be found possible, after blasting, to turn steam into the compressed air mains for a short time, say half an hour. The steam, escaping near the blasting points, would settle the finest dust very rapidly. It would be necessary, if this were done, to provide relief valves to prevent condensed water banking up and producing excessive pressure on the compressed air pipes. They should be set to blow off at about 100 lb. per square inch. The steam should be admitted to the compressed air mains at low pressure through a reducing valve. The compressor boiler would be available for steam supply, as the compressor would not be working, and would supply steam, comparable in amount, with the air supply of the compressor. The hoisting engine boilers would also be available, if required. It would be necessary to see that the expansion joints in the compressed air mains allowed for the rise in temperature due to the steam passed through them. Electric blasting would also make practicable the blasting of developing faces in one operation. Where the hanging wall is good, the whole round could probably be blasted simultaneously with instantaneous fuse. Since the available time for drilling operations is increased, the "cut" could be drilled with four holes instead of the three now usual, and this would remove all doubt as to the cut "coming" and also probably materially increase the advance per "round." Certain precautions are necessary to avoid accidents. Such organisation and rules must be adopted as to ensure that workers are absent from the workings before blasting takes place. All gangers must report on leaving the mine and be responsible for all their hands having left their working places. The actual firing of the charges must only be allowed by specially appointed persons who thoroughly understand what they are doing. All blasting gangers must be provided with a galvanometer testing set, and make sure that all connections are in order before they leave their levels. In order to hear the shots from the surface, it may be necessary to instal telephones to the levels. A cheaper method would be to fix a curved bar of steel into the shaft wall, below the oxidised zone, stretch a steel wire from the bar, and carry it up the shaft to the centre of a thin steel diaphragm about a foot in diameter, the diaphragm being fixed alongside the firing switch. This would enable all shots to be heard by the blasting operator. When the hanging is weak it may be inadvisable to fire all the levels at once. In such cases two pairs of conductors, each connected to alternate levels, may be used. The cables used by the individual gangers should be connected by plug sockets to locked-up switches attached to the drive conductor. The keys should be in possession of the ganger, and master-keys in the possession of the shift boss and mine captain. The galvanometer testing sets should be so made that the plug end of the gangers' cables should fit a socket on the testing set. It will probably be necessary to provide larger separate boxes for the delay-action fuse than are now required for detonators. The drive cables should be connected up at each station with the shaft cables, by means of locked-up switches, the keys to be in the possession of shift bosses, mine captains and blasting men only. At the surface, the whole of the switching arrangements should be enclosed in a locked-up metal control box, only accessible to the mine captain, his deputies, and the blasting men. The first fifty feet or so of the shaft cable should be carried in steel or iron pipe, connected electrically and mechanically to the control box. The box should be "earthed" by connecting it by a copper band to the headgear or other conducting system, so as to avoid all possibility of risk from lightning. The control box should contain, besides the blasting switches, a clock operated switch, so that current can only be "on" for a known and definite interval at a certain time of the day. Such switches are already used for putting light on and off in "lock-up" shops and are obtainable in Johannesburg. It may be necessary, and is advisable, not to take the blasting current direct from the lighting or power mains. It would be better to run a small motor generator (controlled by the time switch) so as to avoid all possibility of the ordinary lighting current being left on accidentally. The cost of this is trifling. It should be the electrician's duty to test all cables systematically and regularly, and not to wait until a fault actually occurs, in order to remedy it. All switches and fittings should be of a heavy solid pattern to suit underground conditions.

The following notice has been posted up, in large type cardboard placards, at the Meyer and Charlton mine:—"The prevention of accidents and injuries, by all possible means, is a very personal duty which everyone owes, not to himself alone, but also to his fellow workmen. Look after your health! Use all available precautions! Suggestions in these connections are welcome."

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TRANSVAAL CHAMBER OF MINES' REPORT.

Recruiting and Health Questions Reviewed.

THE latest report of the Executive Committee states:—

During the three months ended 31st August the disbursements amounted to £6,818 10s. 10d. (including £1,342 4s. 2d. handed to the Transvaal Miners' Phthisis Sanatorium) and the receipts (including £1,238 8s. 4d. received on account of the Sanatorium and £5,000 transferred from fixed deposit) to £7,120 1s. 1d. The sum of £10,000 now remains on fixed deposit. The balance to credit of current account was £2,204 10s. 3d.

Native Labour.—The returns supplied by the Witwatersrand Native Labour Association, Limited, show the following results for the months of June, July and August:—Number of natives employed by members of the Association on last day of month (including natives in the service of mine contractors, but excluding natives in the employ of members of the Association in the districts of Barberton, Breyten and Rooiberg).—On gold mines: June, 188,094; July, 170,242; August, 158,223. On coal mines: June, 9,060; July, 9,403; August, 9,236. On diamond mines: June, 14,654; July, 13,278; August, 13,172. Total: June, 211,808; July, 193,023; August, 180,631.

Recruiting Results.—The Witwatersrand Native Labour Association and the Native Recruiting Corporation furnish the following information with regard to the natives recruited by the Association and its members and the Corporation during the months of June, July and August, 1913, and the districts whence they were obtained:—

Source.	June.	July.	August.
East Coast South of Latitude 22 deg. S.	2,208	1,199	934
Cape Province	1,979	469	2,524
Transvaal Province	594	365	745
Basutoland and Orange Free State Province	1,077	810	1,123
Bechuanaland	302	146	352
Natal Province	354	142	216
Swaziland	267	132	249
Rhodesia (including via Pietersburg)	60	32	114
Local	5,309	4,305	3,674
	12,150	7,600	9,931

Natives Employed in Labour Districts of Transvaal.—The monthly report issued by the Department of Native Affairs shows that at the 31st July, 1913, 278,655 natives were employed in labour districts of the Transvaal. Of this number, 203,557 were engaged on mines and on the various classes of works, i.e., chemical, metallurgical, brickmaking and other works as defined in Part 1. of the Coloured Labourers' Health Regulations, 1906, and 75,098 were in other employ.

Native Grievances Commission.—A Commission has been appointed to "investigate the conditions under which natives are engaged for and employed on the mines of the Witwatersrand, and if any grievances or abuses be found to exist, to make recommendations with a view to the removal thereof: to inquire into the control capable of being exercised over natives housed in compounds in the Witwatersrand area, and to make recommendations as to what measures should be taken with a view to safeguarding life and property in the event of any industrial or other unrest or disturbance." Evidence will be tendered to the Commission by the Witwatersrand Native Labour Association and by the Managers individually on behalf of their respective mines.

Health Conditions of Mines.—Colonel W. C. Gorgas, of Ancon, Panama, has accepted the invitation of your Executive Committee to visit the Witwatersrand for the purpose of reporting on sanitation and betterment of health conditions generally on these fields.

Mining Taxation Act, 1910.—A question has arisen under the above Act as to whether the assets of an absorbed company, which the Government regarded as amortisable by that Company, are entitled to be amortised under the Act by the absorbing Company, or only such portion of them as is in proportion to the consideration given by the absorbing Company to the absorbed Company for its total assets. Your Executive Committee is arranging for the matter to be decided in the Courts by the Chamber on behalf of Gold Mining Companies.

Miners' Phthisis Board's Report.—The report of the Miners' Phthisis Board for the six months ended January 31st, 1913, contains certain tables relative to the expectation of life of claimants under the Miners' Phthisis Act. In the opinion of your Executive Committee, these tables are misleading, and representations are being made to the Hon. the Minister of Mines on the subject.

Ocean Freight on Bullion.—The agreement embodying the proposed reduction in the present freight rate on raw gold has now been signed by all parties, with the exception of the Union-Castle Mail Steamship Company, Limited. The agreement will be signed in London on behalf of that Company, and has been despatched for that purpose.

Vacancies on the Executive Committee.—Mr. G. W. Higgins and Mr. R. W. Schumacher having resigned their seats on the Executive Committee, the vacancies must, in terms of Article 41 of the Chamber's Constitution, be filled at the Ordinary Meeting to be held on September the 29th. In accordance with that Article, Sir Lionel Phillips, Bart., was appointed to fill the casual vacancy created by the resignation of Mr. R. W. Schumacher until such Ordinary Meeting, and is eligible for re-election. Nominations will be received by the Secretary before or at the meeting.

Representation.—The following changes in representation have taken place:—Ferreira Deep. Ltd.—Mr. C. Meintjes *vice* Dr. F. Boerckel. The New Heriot G.M. Co., Ltd.—Mr. Howard Warren *vice* Mr. C. Robinson.

A deputation of miners have waited upon the New South Wales Minister of Mines to urge that provision should be made in the Mining Act Amendment Bill, now under consideration, for an export duty on ores. "Vast quantities of ore," it was stated on behalf of the deputation, "were being shipped to Germany and other places, and it was felt by the members of the deputation that the imposition of the proposed duty would lead to great mining development in the States, and encourage the smelting industry. They would like to see State smelting works established." It is not two years ago, however, since the whole matter was exhaustively gone into at the instance of the Commonwealth Government by the smelting companies themselves, the mining industry, and the Mines Department of New South Wales, when the Under Secretary for Mines reported that while the establishment of additional smelters would lead to a greater consumption of coal and coke, this would be offset by the disadvantages and restrictions which an export duty would impose on the output and disposal of the products of the metalliferous mines, and that in the interests of the mining community the department opposed the scheme. The smelting companies and the mine owners themselves emphatically endorsed the views of the department. In fact, the information gathered in New South Wales was that no one was in favour of the proposed export duty. Dealing with the request for a State smelting works, he pointed out that if a plant were erected in Australia, and equipped with modern appliances for the treatment of such ores as are now exported for treatment, it would cost £4,000,000 at least.

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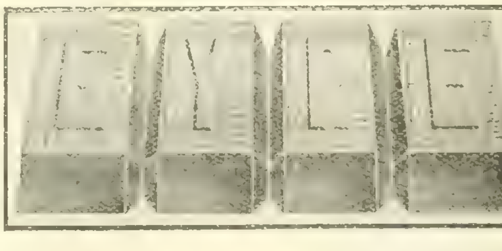

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Rhodesian Section.

LATEST MINING NEWS.

More Light on the Falcon Mystery—Development of the Sabiwa—Globe and Phoenix Developments—The Lonely's Quarterly Report—Susanna Mines.

As bearing on the recent mysterious valuation of the Falcon Mines, the following cable was despatched by the local office of the Falcon Mines, Ltd., to their head office in London, on the 9th September:—Following are the results of bulk sampling carried out absolutely independently of anyone connected with the mine. The samples were taken under the supervision of Walter Currie, consulting engineer to Willoughby's Consolidated Co., Ltd., by J. Black, a mine manager who did similar work on Ivanhoe mine, Australia. The results being from a test on crushing scale are of course compared with the reduced values on which we work out the values of our ore reserves. One set of sealed samples were handed by Walter Currie to the Standard Bank of S.A., Ltd., for assay; another by Black to the mine office and the results have corresponded most closely but the Bank figures are quoted. No. 4 level crosscut, No. 4 east—From 126 tons crushed the value taking gold at 4s. and copper at 10s., was 63·3s. against our reduced value of 71·3s. No. 5 level No. 9 crosscut shaft—From 106 tons crushed the value was 68·5s. against our reduced value of 65s. Level No. 6 crosscut No. 1 east—From 180 tons crushed the value was 52s., our original reduced value was 56s. 6d. In this level the barren horse of country rock met with in the crosscut originally was found to have widened and a larger proportion was consequently broken down in the bulk sample. Taking the value of gold at 4s. 2d. and copper at 11s. 3d., value obtained would be: No. 4 level, 76s.; No. 5 level, 74s. 6d.; No. 6 level, 57s. The widths sampled were respectively 85 ft. and 65 ft. and 75 ft., the less widths being due to drives, winzes, etc.—J. G. McDonald.

* * * *

During July 213 ft. of development were accomplished at the Sabiwa mine. Fourth level drive south extended 35 ft., making a total of 50 ft.; average assay value, 9½ dwts. over the width of drive. Have commenced to crosscut through the body of ore. Fourth level drive north extended 27 ft.; total, 42 ft.; average width of reef over footage advanced, 34 ins.; average assay value, 6½ dwts. Crosscutting 20 ft. from shaft to expose body of ore. Third level drive south extended 7 ft.; total, 399 ft. Short footage on present off reef. Second level drive north and 3rd level drive account of transfer of rock drills to No. 4 level drive, at north in broken formation. Driving on fissure in No. 2 level is being continued. Third level drive south, winze to 4th level down 80 ft. below No. 3 level. The following are the assay results of samples taken at 5 ft. intervals, commencing at 70 ft. below the level: 5 dwts., 6 dwts., 13 dwts. Reef looks well. Third level drive south, crosscut No. 11, assays an average of 13 dwts. per ton over 25 ft. Have commenced to crosscut 2nd level drive south near to Kopje shaft. First section of 3 ft. assays 19 dwts., indicating intersection of pay chute as in No. 3 level south. Developments continue to give satisfactory results.

* * * *

The following shows the developments on the Globe and Phoenix mine during the month of August, 1913: 11th level drive north on Station reef has advanced 13 ft.; average width of reef, 16 ins.; average value over 30 ins., 12 dwts. 12th level No. 1 winze north, No. 1 crosscut east, has advanced 15 ft.; average width of reef, 10 ins.; average value over 30 ins., 23 dwts. 19th level east portion, drive north from No. 1a winze, has advanced 47 ft.; average width of reef, 18 ins.; average value over 30 ins., 5 dwts. 19th level west portion, No. 2 winze north, has advanced 12 ft.; average width of reef, 17 ins.; average value over 30 ins., nil. 19th level east portion, No. 1a winze, has advanced 41 ft.; average width of reef, 21 ins.; average value over 30 ins., 1 dwt. 19th level east portion, No. 3a winze, has advanced 23 ft.; average width of reef, 26 ins.; average value over 30 ins., 97 dwts. 20th level west portion, drive north from No. 1 winze, has advanced 90 ft.; average width of reef, 16 ins.; average value over 30 ins., 3 dwts. 20th level west portion, drive south from No. 2 winze, has advanced 69 ft.; average width of reef, 9 ins.; average value over 30 ins., nil. 20th level west portion, drive north from No. 2 winze, has advanced 60 ft.; average width of reef, 15 ins.; average value over 30 ins., 15 dwts. Crosscutting for the month, 51 ft. Vertical shaft: total depth, 1,283 ft.

* * * *

Lonely Reef: During the three months ended June 30 the supply of native labour was ample for all requirements, and the water supply sufficient for the company's needs. The ore milled was 14,596 tons, which yielded 12,635 ozs., or an average of 17·31 dwts., and a profit of £30,801. As the ore opened up during the quarter amounted to 24,157 tons, the reserves were increased by 9,561 tons, and at the end of the quarter were estimated at 184,228 tons, of an average assay value of 20·05 dwts. Provision has been made as far as possible to keep up the supply of labour over the end of the year when it is usually scanty, and additional wells are being put down to ensure a supply of water during the coming dry months. A cable of August 13 announced that for 20 ft. of driving on the No. 10 level the average width of the reef was 57½ ins., assaying 2 ozs. 4 dwts., but the total width was not exposed. The total length exposed was 30 ft., and the character the same as in the levels above. It is explained that this driving is being carried out from the bottom of No. 2 winze from the 9th level, as the new incline shaft has not yet reached the horizon of the 10th level.

* * * *

Susanna Reef: Winze 11 to 12, north shoot: Has been sunk 6 ft. to a depth of 95 ft. The reef is exceptionally wide here, and have still to strip some hanging down to expose full width. At 85 ft. width of reef 75 ins. assays 9 dwts.; at 95 ft. north shoot reef, south side, 15 ins. wide, assays 6 dwts. Winze 11 to 12 at junction of spur reef to south shoot: This has been sunk 6 ft. to a depth of 14 ft. At 5 ft. reef 60 ins. assays 19 dwts.; at 10 ft. reef 14 ins. assays 15 dwts. 11th level south shoot: Starting from 85 ft. point in spur reef has been driven 5 ft. to a length of 32 ft. Sample at 25 ft. (or 110 ft. from north shoot) reef H.W., 24 ins. assays 6 dwts.; F.W., 9 ins. assays 2 dwts. Sample at 30 ft. (or 115 ft. from north shoot) reef H.W., 26 ins. assays 17 dwts.; F.W., 26 ins. assays 22 dwts. Winze 10 to 11 level, south shoot: Has been sunk 6 ft. to a depth of 67 ft. At 60 ft. reef 10 ins. wide assays 47 dwts.; at 65 ft. reef 18 ins. wide assays 30 dwts. Sample at 55 ft. will be repeated to check it owing to the low value shown compared to all the others. Lady Lina—Winze 3 to 4, No. 1 east: Has been sunk 3 ft. to a total depth of 55 ft. At 50 ft., reef 42 ins. wide assays 18 dwts.

* * * *

An important strike is reported from the Gwanda district. It is stated that a most promising reef section has been located in some ancient workings in the vicinity of the Jessie Mine. The Jessie, it may be recalled, was one of the properties of the ill fated East Gwanda group of mines which went into liquidation some time ago.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

"Winze" or "Winds"?

To the Editor, *South African Mining Journal.*

Sir,—I note with much interest the report of the Sub-Committee of the Chemical, Metallurgical and Mining Society on the standardization of mining and metallurgical terms, appearing in your last issue. There is, however, one word which I have been looking for in the list of spellings which shall be used consistently and which I have been disappointed not to find there, and that is the word which denotes a small underground shaft connecting one level with another. I know that practically every mining man in South Africa will spell this a "w-i-n-z-e," but in some parts of the world it is spelled "w-i-n-d-s." What is the origin of the word anyway? Perhaps as ore is often hauled up one of these little shafts the derivation of the word has something to do with the act of winding, hence "winds." Or perhaps as the little underground shaft is often a connection between levels for purposes of improving ventilation it had in the remote days of early English mining some connection with the wind. In either of these cases "w-i-n-d-s" would be a truer word than "w-i-n-z-e." Perhaps some reader can enlighten me,—Yours, etc.,

ERUDITE.

[The word is generally spelt "w-i-n-z-e"; in fact, outside of Cornwall "w-i-n-d-s" is most rare and unusual. It is believed that the word winze is of Icelandic origin, from "vindra" meaning wind, or "vinza" winnow. Possibly therefore our correspondent is right in stating that "w-i-n-d-s" would appear to be a justifiable spelling, although ninety-nine mining men out of a hundred prefer and use winze.—Ed.]

Reduction of Underground Accident Rate.

To the Editor, *South African Mining Journal.*

Sir,—The Government Mining Engineer's recent report on the above question contains recommendations which, if carried out, should bring the accident rate underground to a very much more satisfactory figure. But in connection with this subject, I feel that sufficient attention has not been paid to the question of timber. Not so much the quantity of timber used, but the quality. This country is fortunately blessed with large tracts of native forests, whose timbers are most eminently suited for mine support. Natal forest, for example, and this supply, combined with the gum and wattle (both excellent timbers), plantations, leaves little excuse for the use of inferior timber. I am thinking particularly of the "cluster" pine or fir, and similar woods, such as "pinus insignis," of which useless stuff there are numerous plantations in the Transvaal and elsewhere. To emphasize my point, I will give two personal experiences of the use of this timber. At one of the West Rand mines, some six years ago, a main reef stope which particularly needed keeping open, so that the south reef above could be worked out, was stacked with pine, *i.e.*, pigsties built and filled, 20 feet apart through the whole area, in such a way that it was impossible for the stope to cave badly as long as the timber kept sound. In four months' time one could go through the stope and break off the four-inch horns of the stacks with one hand. The creep came and the whole of the timbering just crumbled up and the stope was lost, fortunately without loss of life. In another mine the use of this timber resulted in the same thing, only that in this case complete decay took place in three months. There is the gravest danger attached to the use of these inferior timbers where the safety of life is at stake. It may look sound in position, and at the same time is quite unstable and decayed. I feel induced to write this letter as a warning, because there seems to be a tendency to use these inferior timbers, on the plea of cheapness. Seeing that the country is supplied by nature with sound, reliable timbers, the use of inferior varieties as indicated constitutes a grave mistake, and is a serious menace to life where so much dependence must be placed on the timber as an underground support.—Yours, etc.,

"SOUND-PROP."

Moodies.

The report of Moodie's Gold Mining and Exploration Company, Limited, for the year ended March 31 last states that work on the alluvial flat has been greatly retarded on account of the short supply of water during the year, and the working cost has been nearly doubled thereby. In accordance with the resolution adopted at an extraordinary general meeting on July 7 last, the head office is now removed to London, where all future ordinary and extraordinary general meetings of shareholders will be held. In consequence of the change of control and the removal of the head office, the directors in South Africa, Sir Thomas Murray, Colonel E. M. Greene, Mr. P. F. Payn, and Mr. W. J. O'Brien, have resigned, and Mr. William White, of London, has been appointed a director.

Mining Monopolies in the Congo.

The practical monopoly of mining in the southern part of Congo territory enjoyed by several mining companies, more particularly the Union Minière, has frequently been discussed by prospectors and the local Press on the score that it retards the development of the country. In writing on this subject, Mr. Pearson, Acting Vice-Consul at Katanga, points out, however, that it would be bad policy indiscriminately to grant licences for mining in the district at the present time. It is extremely doubtful, he says, whether the immediate development of the numerous base metal mines, which lie at present in an untouched state until their controlling company is prepared to deal with them, would assist in any degree the wholesome development of the country. The heavy cost of working such base metal mines whilst they are still at a considerable distance from the railway would render individual prospectors powerless to deal with their finds save through the medium of powerful companies; difficulties in transport and labour which are sufficiently great to prevent such a powerful company as the Union Minière profitably exploiting on its own account at the present time the less readily accessible mines in its possession, would only be rendered far more acute were such mines leased to other companies, which would proceed to compete actively for the still undeveloped labour resources of Katanga. The enormous expense which would be involved in labour and transport in the working of numerous distant mines by sub-companies at the present time would lead inevitably to loss and disappointment to themselves and possibly to the crippling of those enterprises which are now being conducted with success. The policy which controlling mining companies are adopting, of only carrying on development upon those mines which are reasonably accessible, may thus be considered to be absolutely sound.

Transvaal G.M. Estates.

The Transvaal Gold Mining Estates, Ltd., has declared a dividend of 20 per cent., or 4s. per share.

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* * * *

The British Position in S.A. Trade.

Unquestionably the most important section of Sir R. Sothern Holland's recent report to the Board of Trade is that dealing with foreign competition. Ranking sixth in point of value among the countries of the world as a buyer of British goods—those taking higher rank being India, Germany, Australia, the United States, and France—South Africa annually absorbs the produce and manufactures of the United Kingdom to upwards of £20,000,000, that sum representing between 50 and 60 per cent. of the total mercantile imports of the Union and Rhodesia. Unhappily, however, the percental share of Great Britain in this trade fluctuates from year to year, with a general tendency downward. In 1907 it stood at 56·7, in 1908 at 56·2, in 1909 at 58·1, in 1910 at 59·05, in 1911 at 58·3, and in 1912 at 58·0; but—and here we go beyond the Trade Commissioner's report—during the first half of the present year it stood at no more than 55·6, the month of June having a showing, indeed, of only 53·5. As, however, is pointed out in the report, slight fluctuations of this kind have no special signficance, particularly in view of the fact that while the imports of South Africa from the United Kingdom consist almost entirely of manufactured goods, those from foreign countries are comprised to a large extent of produce, absolutely non-competitive with British trade.

* * * *

Where Foreign Competition Scores.

Sir R. Sothern Holland, while submitting that in a general way there is every reason for satisfaction in the British position, refuses to ignore the danger which threatens the trade of Great Britain with South Africa from foreign competition in many directions, and he goes to considerable pains by means of elaborately prepared statistical tables to point out the zones of danger. With characteristic thoroughness he places the import trade of South Africa into three distinct divisions, viz., (1) goods in regard to which British manufactures stand more or less supreme, as, for example, apparel and slops, cotton piece goods, haberdashery, hats and caps, boots and shoes, cotton underclothing, bar iron, printed matter, cycles and parts, motor cycles, jewellery, plated and silver ware, golden syrup, and writing paper; (2) goods in regard to which Great Britain holds its own while encountering keen competition, this category including confectionery, bacon and hams, blankets and rugs, corrugated galvanised iron, paints and colours, furniture, earthenware and china, general hardware, mining machinery, electric wire and cables, electric fittings and posts, iron and steel piping, bands and belting, leather manufactures, and motor cars; and (3) goods in regard to which British trade is actually behind that of foreign countries, this section comprising such items as fencing material, agricultural machinery and implements, and electrical machinery.

* * * *

The Activity of America and Germany.

With regard to the second section, which deals with trades in which Great Britain is holding its own against keen competition, it is noteworthy that Germany is our serious competitor in all but four of the items named, viz., bacon and hams, galvanised iron, paints and colours, and bands and belting; and America takes an important interest in all but five, viz., bacon and hams, blankets and rugs, earthenware and china, electric wires and cables, and leather manufactures. Australia and Switzerland are represented to an important extent in confectionery; Belgium and Italy in blankets and rugs; and Denmark in hams and bacon; while in saddlery and harness the competition is chiefly from the growing industry in South Africa itself. As for the cases in which foreign competition is successful against British goods, America, Belgium and Germany take the leading shares in fencing wire; America and Canada in agricultural machinery, with Germany added in regard to implements; Sweden and Germany supply most of the dairy utensils; and Germany and America hold strong positions with respect to electrical machinery. Such lists are not by any means exhaustive of the subject, but they are sufficient to indicate tendencies, and are therefore roughly adequate for the purpose in view.

* * * *

American Advantages and German Thoroughness.

In spite of the growing volume of German trade with South Africa during the past few years, and the fact that American trade with that country consists largely of the shipment of natural products and non-competitive commodities, Sir R. Sothern Holland attaches greater importance to United States competition than to that of Germany, among his reasons being the fact that Americans have to deal with conditions in South Africa very similar to those in their own country, this especially accounting for their success in all classes of agricultural implements and appliances, water boring machinery, and fencing material, and assisting them also to a great extent in the motor car trade. Again the inventive genius of the Americans gives them an advantage in being able to supply new and attractive lines, as recently shown in the display of types of foreign tools in wide demand on the South African market. Their workshop practice and vigour in oversea selling arrangements also tell in their favour. In regard to German competition, its activity is a threatening factor on many sides, the manufacturers of the Fatherland responding readily to the requirements of South African buyers, while they take great pains in the selection of suitable agents, pay them well, and support them to the utmost, besides being always ready to adapt goods to the individual wants of merchants, and giving prompt delivery. It is part of the policy of German manufacturers also to include in packages attractive samples of numerous other goods which they can supply; and altogether there is a striking thoroughness in German commercial methods worthy, as the Commissioner remarks, of imitation.

A circular has been issued by the Lydenburg Estates, Ltd., together with a map indicating the various farms held and their relative position to the railway. It mentions further that satisfactory progress has been made with the development scheme, and the agent in South Africa has been instructed to avail himself of the services of the Government irrigation officer in regard to drawing up an irrigation scheme for the farm Doornkraal. Four tributaries of the Nels River run through this farm, so that sufficient water would be available even in the driest season to irrigate a considerable portion of the land which is now being ploughed. It is proposed to utilise portions of the farm for general agriculture, fruit-growing, the planting of wattle and stock farming. The circular concludes with the statement that a continued and satisfactory demand for agricultural properties in the Lydenburg district exists, and that the company has received several enquiries for the surface rights of its farms

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THE WEEK IN THE SHAREMARKET.

Steady but Quiet—Good Undertone.

THOUGH the market remains surprisingly firm, very little business is going through. There are several bargains in prices being quietly picked up, but the market remains one of specialities. All Rand stocks are steady, and the smaller priced ones are in somewhat increased demand. Tins and diamonds are quiet, tempered, however, by the expectation of the rise. In any increase of activity they are likely to lead the way. Among the features of the week may be mentioned the excellent strikes of reef at the Geduld and Van Ryn Estates; the statement that fresh capital was being sought to re-open the Afrikander: the progress at the State Mines; and the satisfactory reports from the Main Reef West and Consolidated Main Reef. The Frank Smith property is about to re-start washing with excellent prospects, and a good September output is expected from the Crown diamond mine. The few fluctuations of the week are shown below:—

	Friday, 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.	Wed., 24th.	Thurs., 25th.
Adair Ushers ..	—	0 3B	0 3B	0 3B		0 3B
African Farms ..	15 6	15 3B	15 3	15 0B	15 0B	15 0B
Apex Mines ..	19 3B	20 6S	19 0B	19 0B	19 0B	19 0B
Bantjes Consolidated	—	14 6B	14 0B	14 6B	14 0B	14 0B
Benoni Consolidated	2 3B	2 4B	2 3B		2 3B	2 3B
Brakpan Mines ..	58 6B	58 6B	58 6B	58 0B	57 6B	57 0B
Breyten Collieries	25 0B	25 0B	25 0B	25 0B		25 0B
British S.A. ..	-		21 0B	21 0B		21 0B
Bushveld Tins ..	0 8	0 7B	0 7B		0 9S	
City & Subs. (£4) ..	44 0B	45 0	44 6B	44 6B		45 0B
City Deeps.. ..	53 6B	55 0B	53 9B	53 6B	54 0B	54 0B
Cloverfield Mines ..	4 2B	4 2B	4 2B	4 2B	4 3	4 1B
Clydesdale Colls. ..	8 6B	8 6B	8 6B	8 6	8 0B	8 0B
Cons. Langlaagtes	25 0B	25 0B	25 0B	25 0B		
Cons. Main Reefs ..	16 9B	17 0B	17 0B	17 0B	17 3B	17 3B
Cons. Mine Select.	8 0B		8 0B	8 0B		—
Coronation Colls. ..	12 6B			12 6B	12 0B	12 0
Coronation Freeholds	0 5B	0 6	0 6		0 5B	0 6S
Crown Diamonds ..	10 6	10 9	10 6	10 6B	10 9B	10 3B
Crown Mines ..	133 6B	133 9B	-	133 9B	132 6B	--
Doornhoek Tins ..	5 9B	6 0B	6 0B	6 0B	6 3B	5 9B
East Rand Centrals	7 9B	7 9B	7 9B	7 9B	7 9B	7 9B
East Rand Coals ..	1 9B	2 0S	1 9B	1 10B	1 10B	1 9B
East Rand Deeps ..	1 4B	1 5B	1 5B	1 4B	1 4B	—
East Rand Deeps ..	—	46 6S	—	-	44 0B	—
Eastern Golds (1/-)	1 0B	—	1 0B	1 0B	—	1 0B
Frank Smith Diam.	9 1B	9 0	8	8 6B	8 10B	9 2
Geduld Props. ..	20 6B	21 0	21 0B	21 3B	22 0S	22 9
Ginsbergs	24 0S	22 0B	22 6B			
Glencoe (Natal) Colls.	7 3B	—	7 3B	7 0B	7 3B	7 3B
Glynn's Lydenburgs	14 9	14 6B	14 6B	15 0B	15 3B	
Government Areas	21 3B	21 3B	21 3B	21 3B	20 9	20 6
Jupiters	4 9B	4 6B	4 6B	4 6B	4 6B	4 6B
Kaalfontein D. (2/6)	0 5	0 5B	0 5B	0 6B	0 5B	0 5B
Klerksdorp Props.	2 3B	2 2B	2 2B	2 2B	2 2B	2 2B
Knight Central ..	7 3	7 0B	7 0B	7 0	6 6B	6 6B
Knights Deeps ..	—	—	- -	—	35 0S	34 6S
Lace Props. ..	—	2 9B	2 9B	3 0S	2 9B	2 9B
Luipaardsvlei Esst.	—	6 6		7 0B	7 0B	7 6B
Lydenburg Gold Fms.	2 10	2 9B	2 9B	2 10B	2 11	2 8*
Main Reef Wests ..	9 0B	9 0B	9 0B	9 0B	8 9B	9 0
Middlevlei Estates	1 0B	1 0B	1 0B	1 0B	1 0B	- -
Modder B's.. ..	75 0B	75 0B	75 0B	75 0B	76 0B	75 0B
Modder Deeps ..	30 3B	30 6	30 6	30 3B	30 6	30 6B
Natal Navigation Col.	—	-				14 0B
New Era Cons. (5/-)	6 3B	8 3B	6 3B	6 6B	6 6B	6 3B
New Geduld Props.	2 0B	2 0B	2 0B	2 0B	2 0B	2 0B
New Kleinfonteins	23 0B	22 9	22 3B	22 6B	22 6B	22 9B
New Unifieds ..	14 3S	14 3S	12 0B	12 0B	12 0B	12 0B
Nigels	15 0B	15 0B	15 0B	15 0B	17 0B	15 0B
O.F.S. & Trans. Dia.	1 8B	1 6B	1 10S	1 6B	1 9	1 9B
Premiers Def. (2/6)	—	-			220 0B	
Pretoria Cement Co.	46 0B	46 0B	45 0B	45 6B	46 6B	46 6B
Princess	4 0B	4 0B	4 0B	4 0B	—	4 0B
Rand Collieries ..	—	3 6S	-		3 0S	2 9S
Rand Klips ..	1 9	1 7B	1 6B	1 6B	1 8B	1 7B
Rand Nucleus ..	1 9B	1 9B	1 9B	1 8B	1 9B	1 9B
Randfontein Deeps	—	3 0B	3 0S	3 0B	3 3S	
Randfontein Estates	26 6B	26 6B	26 3B	26 6	26 3B	26 3B
Roberts Victors ..	30 0B	30 0B	30 0B	30 0B	30 0B	32 0
Robinson Deeps ..	—	-		---	32 6S	
Rooiberg Minerals	29 3	29 3	28 6B	28 6B	28 0B	28 0B
Rood. Durban Deeps	—	—		.		22 6S
Ryan Nigels ..	—	3 0B	3 0B	—	—	—

	Friday, 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.	Wed., 24th.	Thurs. 25th.
Shebas	—	—	—	—	5 0B	5 0B
Simmer Deeps ..	2 0B	2 0B	—	—	2 0B	2 0B
S.A. Breweries ..	40 0B	40 0B	—	40 0B	40 0B	40 0B
S.A. Lands ..	3 4B	3 5B	3 4B	3 4B	3 3B	3 3B
Springs Mines ..	15 9B	—	15 9B	15 6B	15 6B	15 9B
Sub Nigels	—	10 3S	8 6B	8 6B	9 0B	9 0B
Swaziland Tins ..	46 0B	49 0S	49 0S	49 0S	48 0S	—
Trans. & Delagoa ..	—					37 6B
Trans. Coal Trusts	36 0S	34 9B	36 0S	34 0B	34 0B	34 0B
Trans. Cons. Lands	—	22 0B	22 0B	-	—	—
Trans. G.M. Estates	53 6B	—	54 6S	- -	-	53 0B
T.G.M. Estates ..	—	£100B	—	—	—	-
Van Ryn Deeps ..	33 9	34 0	34 3	35 0	35 0	35 6†
Village Deeps ..	37 0B	-	—	36 6B	37 0B	36 6B
Vogel. Cons. Deeps	0 6B	—		-	0 9B	0 9B
West Rand Estates	-	-	—	—	3 0S	—
Witbank Collieries	39 6B	37 0B	39 0B	—	39 0B	39 0B
Witwatersrands ..	71 0S	-	65 0B	68 0B	68 6B	-
Wit Deeps ..	56 0B	56 0B	56 6	57 0	55 9B	55 6
Wolhuters	15 0B	15 3	15 3B	15 0B	14 9	14 6B
Zaaiplaats Tins ..	36 6B	—	35 6B	35 0	35 0	35 0

B Buyers. S Sellers. *60 Shares. †Ex London.

Mr. Donald McHardy has been appointed to succeed his late father as general manager of the Premier mine.

* * * *

The annual dinner of the Royal Technical Institute, Glasgow, takes place at the Carlton Hotel to-night, and promises to be a most successful function. The Minister of Mines will be present, and the gathering will be made the occasion for several important speeches.

"Department of Mines and Industries."

It is officially notified that the designation of the Department of Mines has been altered to "Department of Mines and Industries."

Swaziland Tin.

The following are the particulars in regard to operations for the month of August, 1913:—Concentrates recovered, 30·232 tons; estimated profit (taking the price per tin at £180 per ton), £1,519; deduct adjustment in respect of shipment No. 98 due to fluctuations in the price of tin, £17; net profit for the month, £1,502.

Ferreira Deep.

An interim dividend of 25 per cent. (5s. per share) has been declared by the board of the Ferreira Deep, Ltd., for the half-year ending 30th September, 1913. This dividend will be payable to all shareholders registered in the books of the company at the close of business on 30th September, 1913, and to holders of Coupon No. 21 attached to share warrants to bearer. The transfer books of the company will be closed from the 1st to the 7th October, 1913, both days inclusive.

There are in South Africa three large explosive factories at Modderfontein, Somerset West, and Umbogintwini, and during the past year three small tshisa stick factories have sprung into existence in the neighbourhood of Johannesburg. The quantity of explosives manufactured in 1912 was as follows: B.S.A. Explosives Co., Modderfontein, 256,304 cases, a decrease, as compared with 1911, of 323 cases; Cape Explosives Works, Somerset West, 422,158 cases, a decrease of 5,380 cases; Kynochs, Ltd., Umbogintwini, 237,252 cases, an increase of 28,625 cases.

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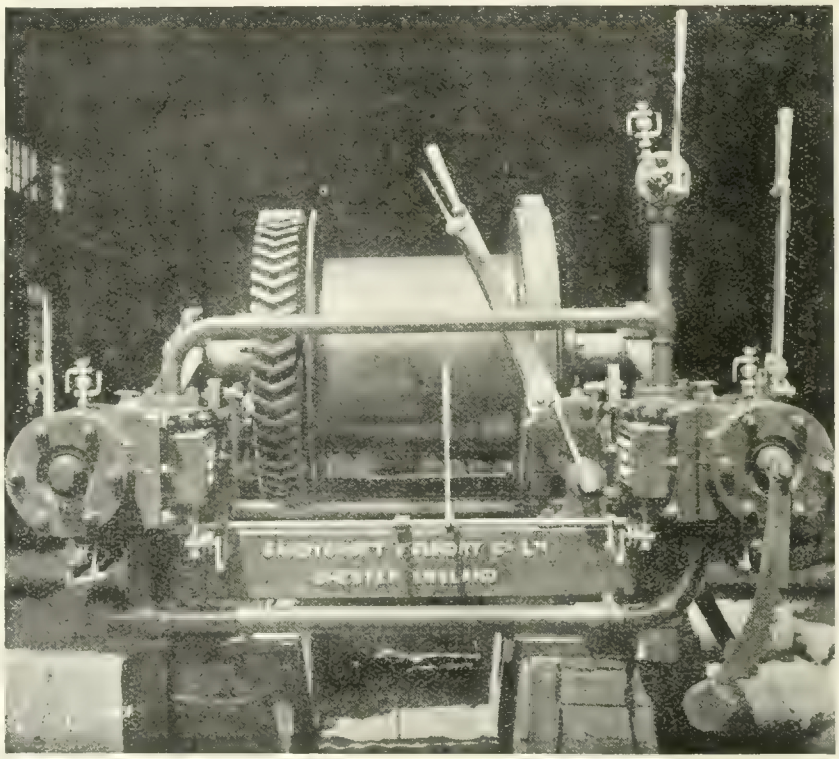

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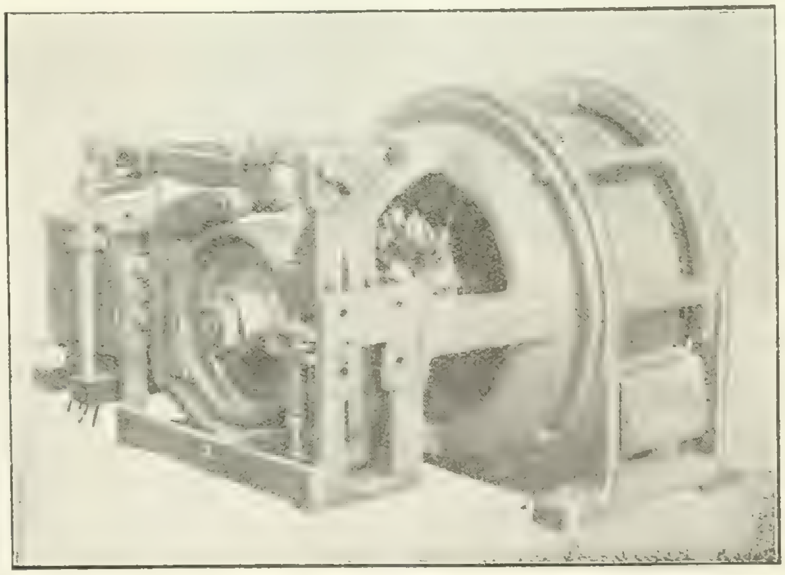
Engineering Notes and News.

Steel Pipes v. Cast Iron Pipes.

(Continued from last week.)

Continuing the investigations with regard to the resistance of cast iron and steel against the attacking influences of acids and salts contained in the soil, and before concluding the consideration of unprotected pipes, a few words may be mentioned about the natural cover of both classes of piping, *i.e.*, the casting skin and the rolling skin, the rough and the smooth surface of the pipes. The casting skin does not, as many people believe, cover the iron entirely. There are infinitely small bare patches distributed over the whole surface, microscopically small but large enough to form natural channels through which acid and salt water finds its way to the metallic iron. The granular structure of cast iron, the pores and unavoidable blow holes, enable thus the aggressive liquid to attack the iron quite easily. Furthermore, rust settles down very quickly on the rough and adhesive surface of the casting skin, which after all is only formed at the expense of the inner structure of the iron; a considerable percentage of the most valuable ingredient, the carbon, being brought to the surface and the inner material thus being robbed of its carbon, becomes consequently richer in graphite and therefore looser, more fragile and liable to being more easily deformed. The rolling skin of the wrought iron and steel pipe may be less useful than the casting skin; the great smoothness of its surface, however, is very valuable indeed, for it is a well-known fact that corrosion and chemical destruction by carbonic acid, oxygen, etc.,, generally starts in small hollows and flaws. After having dealt in brief with scientific tests and experiments with regard to the resistance of cast iron and steel, a few practical examples may be mentioned. In practice neither cast iron nor steel pipes are used without a protective coating. As mentioned before, the whole question of rusting evolves itself more and more into the question of protection against rusting. Now what is the best way to protect the pipes against external influence, and how far does this protection actually fulfil its purpose? Under ordinary circumstances it is quite sufficient, as practical experience has shown, to protect the pipes with a coating of specially prepared asphalte mixture. Steel pipes coated with asphalte mixture are in use all over the world with great success. For instance, the chief engineer of the Spring Valley Water Company, San Francisco, and consulting engineer to a number of other firms, describes, in a letter, dated October, 1906, his experience with wrought iron tubes asphalted only. According to his statements, after 40 years' experience, all mains constructed by him have given perfect satisfaction, and among others he mentions the following lines: Pilarcitas pipe line, 67,000 feet, 30 inches in diameter, constructed in 1867; San Andreas pipe line, 36,000 feet, 30 inches in diameter, constructed in 1869; the Coystatt Springs pipe line, 90,000 feet, 44 inches in diameter, constructed in 1865; Alameda pipe line, 145,000 feet, 36 inches in diameter, constructed in 1887; Cheroquee Flat pipe line, 12,400 feet, 30 inches in diameter, constructed in 1869; Cheroquee Flat pipe line, 5,000 feet, 30 inches in diameter, constructed in 1870; Isle of Main, Hawaii Islands, 214,000 feet, 41 inches in diameter, constructed in 1878; Virginia City pipe line, 37,000 feet, 12 inches in diameter, constructed in 1873. An interesting example of the behaviour of both cast iron and steel pipes under similar conditions has been found in the case of the West Australian pipes (Coolgardie). In this district a 12 inch cast iron main was laid in 1890. This gave considerable trouble, so that when an increased supply was required in 1897 a 21 inch steel main was laid, and this has proved very satisfactory. Eight years ago the cast iron main was so corroded that scraping from end to end was necessary, and five years later this process had to be repeated. The nodules of rust on one of these pipes after five years' corrosion were found to be from 2 inches to 3 inches thick, and covered the entire inner surface of the pipe. On removal, the metal surface of the pipes appeared to be unaffected. On investigation, however, it was found that it could be cut with a knife, and a soft black graphite-like substance 3/16 inch thick was removed. Under this the true metallic surface was found to be extensively and irregularly corroded. A section of the 21 inch steel main was removed for examination after eleven years' use. The coating of this pipe was in good order, being dark and lustrous, and showed very little evidence of decay. The surface of the coating was covered with a very thin film of brown earthy sediment, which, however, was not sufficiently thick to hide the coating. In comparing cast iron and steel pipes it is desirable to study further Australian experience. All the leading centres throughout Australasia, viz., Melbourne, Sydney, Adelaide, Perth, Brisbane, Auckland, Wellington, and a number of others are supplied with steel water mains, which, one and all, have proved unqualified successes. The original Melbourne wrought iron water mains, 58 miles long and varying in diameter from 32 inches to 53 inches, were laid in 1881. According to a recent advice from the Inspector-General of Works in Melbourne, these mains are in as good a condition as when they were laid. The same condition prevails in other smaller mains installed there since. One—a 24 inch—laid in 1887 is particularly interesting in that it affords a direct comparison with cast iron. The engineer wrote, with regard to this main, on May 18th, 1902: "Some alterations in this main necessitated cutting out a length, including a 12 inch cast iron branch nipple. This afforded me a welcome opportunity of examining the plates in several places. The inside of the pipe is now as if it had just come out of the (tube) works, so perfect and japanlike is the coating, and, making allowance for the adhering clay, the same may be said of the outside. This is more remarkable from the fact that, in an equal period, a cast iron pipe of equal diameter would have lost at least 1 inch and more, probably 2 inches, of section from corrosion. The cast iron branch, which had been connected to this wrought iron pipe, with its valve, were heavily covered with material adhering to the inner surface in the form of nodules, and consisting of oxide of iron and earthy matter attached to it. This deposit or incrustation is peculiar to all cast iron pipes, large and small, in the Melbourne water supply system. Its rate of growth is equal to the complete filling up of a 4 inch pipe in from 15 to 18 years." The 72 inch wrought iron mains of the Sydney water supply (one laid in 1887, the other in 1900, and each 5½ miles long) show practically no sign of corrosion whatever, and have been so free from leakage that the local engineer, in giving evidence before the Coolgardie Commissioners in 1902, made the statement: "In 15 years, except at the starting of the main when filled, it was impossible to obtain from its whole length a cupful of water a day; in fact, one could not get any leakage at all." A similar condition prevails in the hundreds of miles of steel mains laid throughout Australasia for the water supply of all the leading centres. Profiting by the success of steel pipes in Australasia, other countries have followed suit. Monte Video, after experience of cast iron, duplicated their existing main with one of steel, 30 inches in diameter and 30 miles long. Fifteen years ago, Bradford (Yorkshire), laid two 36 inch water supply mains which have proved an unqualified success. Some years ago the Leeds municipal authorities, having in view the experience of Bradford, laid 24 miles of 33 inch steel pipes for the water supply. In the neighbourhood of Leeds there are well-preserved samples of wrought iron pipes which have been in the ground for fifty to sixty years. Other towns in Great Britain which have laid steel mains during recent years are Manchester, Swansea, Cardiff, and many smaller towns. All the leading centres of population throughout South Africa have adopted steel water mains, some of which have been in successful operation operation for over 20 years. This, so far as pipes are concerned, coated with asphalt mixture only. All practical men agree, however, that for all conditions of soil asphalting only is insufficient protection, so, for instance, where acids and salts have to be taken into consideration; although steel and wrought iron, even in the unprotected state, are an advantage over cast iron, as has been proved before, the protection of steel pipes is a subject to which a great deal of attention has been devoted. If circumstances point to heavy corrosive influences it is best to order cast iron as well as steel pipes, apart from the usual coating, wrapped with tar soaked jute cloth. Only thus prepared pipes would give entire satisfaction with regard to long life, and it is a regrettable fact that the manufacturers of cast iron pipes have not adopted this method of protection sooner, which has given such excellent results with steel pipes. As evidence of the efficiency of such protection reference may be given to the case of some thirty miles of 30-inch lock bar pipes for high pressure (similar to the water mains of Coolgardie) which were laid in Staffordshire ten years ago. These mains were laid through heaps of slag and ashes, well known to exercise a highly corrosive action on steel. When last inspected they were in as good a state of preservation as when laid; the pipes and coating being intact and bearing



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every indication that they will remain so for an indefinite period. A very perfect type of pipe, which might be recommended without hesitation for even the most unfavourable conditions of soil, and which since its introduction about 25 years ago has given the greatest satisfaction, not only from it being practically incorrodible but also on account of its other technical advantages, is the heavy type weldless solid drawn steel spigot and faucet pipe, jute covered. For technical reasons, however, this class of piping cannot be manufactured above 12 inches internal diameter. To prove by practical experience that which is claimed as the incorrodibility of the solid drawn piping it might be said that when laid even in acidous soil and compared with cast iron pipes the former have proved to be incomparably superior. To quote a few definite instances we may mention the Swansea Corporation (waterworks department), the Cardiff Corporation (waterworks department) and others who have had most satisfactory experience in this respect. To give further instances we can refer to weldless steel pipes laid on the seashore in Pola (Austria) nearly 17 years ago, where they are constantly under water at high tide, and they are still in good condition. At Ischl (Austria) this kind of tube was put into salt mines about 20 years ago as a substitute for cast iron, as the latter frequently broke up badly owing to severe strains. Although continually in touch with acidous waters and with salty incrustations on the outside, the report is that the weldless steel tubes stood the strain without injury and remained clean without a vestige of corrosion, although, in the latter case they were not even tarred or covered in any way. Again, the Lautaro Nitrate Company, after using solid drawn steel pipes for 20 years in the nitrate fields—the severest test one could apply, and in any case severer conditions than prevailing in this country—had such satisfactory results, that they confidently declared them the best material on the market for their purpose. At Swansea, a main was examined in the presence of independent witnesses and found to be in excellent condition after nine years' service; whereas a cast iron main in the same district, taken up only after seven years' service, was found to be badly corroded, the soil being of a corrosive nature. At Street (Glos.) a cast iron and a weldless steel tube main (9 inch) were laid at the same time, the latter being in exposed positions. In 1912, after about eight years' service, these tubes were still in good conditions, whereas the cast iron pipes were badly corroded. These are only a few of the numerous instances where lapwelded and specially solid drawn steel pipes have proved in practice their superiority over cast iron. Of course, there are just as well known cases where steel pipes have failed, but when investigating the conditions of the soil it was found that same were such that neither steel nor cast iron would have lasted. In concluding, however, the question of resistance of cast iron and steel against the destroying effects of the soil might be regarded as settled nowadays. It has been sufficiently proved by scientific investigations and by practical experience as well that steel and wrought iron are at least as reliable as cast iron, and if properly protected give even greater satisfaction. Some qualities of the solid drawn steel and lapwelded piping, however, must still be mentioned:—(1) They are unbreakable and consequently cost practically nothing for repairs and maintenance (whether by subsidences, heavy vehicular traffic, or any other cause)

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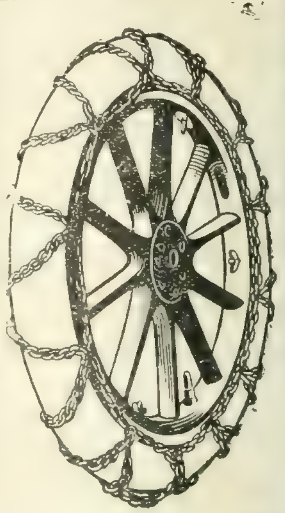

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and the joints being 70 per cent. fewer and 100 per cent. tighter. (2) Owing to the long lengths (up to 40 feet) and light weight (about one-third of that of cast iron) they are at least 50 per cent. cheaper to instal. (3) The smaller sizes can be bent cold *in situ*, without trouble (this refers only to solid drawn piping). (4) Friction is considerably reduced owing to the smooth surface. (5) Leakage reduced to a minimum in consequence of the fewer and tighter joints. (6) Adaptability for high pressure. The tubes will serve with perfect safety should the high-pressure system be at any time adopted, thus saving the enormous cost and great public inconvenience of relaying. Already they are being extensively used for high-pressure work. (7) Adaptability for difficult positions. The long lengths and light weight render these invaluable for bridge work, railway crossings, works, mains (especially where these have to be suspended or supported on brackets), collieries, etc. (8) Less cover required, owing to their being unbreakable and the jute covering affording protection against the effects of temperature, etc., the tubes can be laid at least 25 per cent. nearer the surface. This not only means the overcoming of difficulties in many circumstances but also results in very large additional savings in trenchings, etc. These are advantages which cannot be overlooked by any practical engineer and which explain partly the rapidly increasing demand for steel pipes since the last 20 or 25 years in every part of the world.

Fast Hoisting at English Collieries.

The following leading British collieries, which show fast hoisting under normal conditions, supply good examples of modern practice:—Dowlais Mine, Cardiff, 2,220 ft. in 52 seconds, an average winding speed of 2,562 ft. per minute; Ashton Moss Colliery, 2,850 ft. in 1 minute 25 seconds, or 2,010 ft. per minute; Lady Windsor Colliery, 1,500 ft. in 35 seconds, or 2,571 ft. per minute; Bolsover Colliery, 1,116 ft. in 28 seconds, or 2,388 ft. per minute; Denaby and Cadeby Collieries, 2,289 ft. in 55 seconds, or 2,497 ft. per minute; Rhodes Rotherham Colliery, 1,650 ft. in 45 seconds, or 2,358 ft. per minute; while at the Rosebridge Colliery, a maximum hoisting speed of 5,100 ft. per minute has been recorded; but this is excessive, as, for considerations of safety, it should not exceed 4,000 ft. per minute. From the foregoing data, and taking into consideration the needs of a regular pit (remarks the *Colliery Engineer*), an average hoisting speed of 3,000 ft. per minute may be assumed to represent the best modern practice in England. A comparison of these figures with American and Continental practice would be of interest.

AMUSEMENTS.

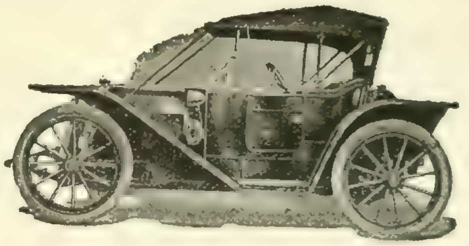
NEXT WEEK'S PROGRAMME.

His Majesty's Theatre Wheeler-Edwardes Company ...	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou ..	7 and 9

INVESTORS' DIARY.

The following company meetings have been announced:—

Sept. 26.—Simmer and Jack Prop.
Sept. 26.—Sub-Nigel.
Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.



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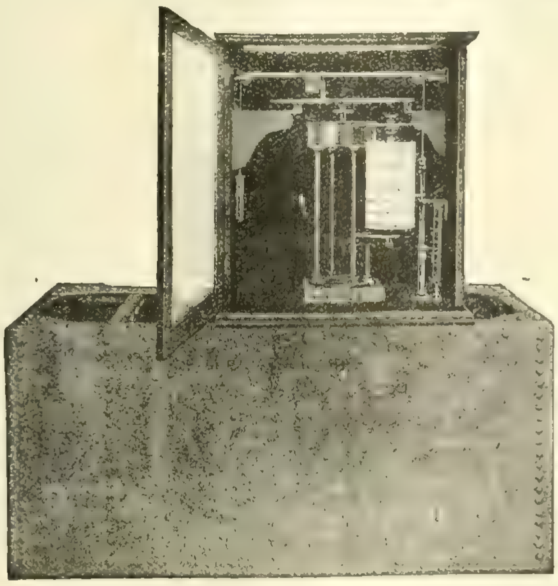

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A TEST WAS CONDUCTED BY THE NATIONAL PHYSICAL LABORATORY ON A "**PRECISION**" *METER SHOWED AN ERROR OF CONSIDERABLY LESS THAN 1 PER CENT.* **PRICES** *ARE* **LOW.** *ARK FOR LIST M/31.*

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The Week's Company Meetings.

TRANSVAAL GOLD MINING ESTATES.

Most Satisfactory Results.

Full Report of Meeting.

The sixteenth ordinary general meeting of the Transvaal Gold Mining Estates, Ltd., was held in the board-room, Corner House, last week, Mr. H. C. Boyd presiding. Among those present were Messrs. J. H. Ryan, H. Daniel, C. Meintjes, G. H. Darby, S. W. George, H. Smit, C. H. Dawes, S. Zwarenstein, B. T. Bourke, S. M. Nelson, M. Dold, and C. H. Wilkins, representing 116,058 shares out of an issued capital of 604,225.

The Chairman, in moving the adoption of the report and accounts, said: The report and accounts which are now submitted for your approval cover the twelve months ended the 31st of March, 1913, and have been in your hands for a considerable time. As you have seen, improvements have again been effected in the form in which the technical reports and the accounts are presented. The general manager has written one covering report, while the results of the operations of the various mines are embodied in one working revenue and expenditure account. The year's profit of £277,415 exceeds that of the previous year—till then the highest earned by the company—by some £72,000, and is a satisfactory testimony to the success of the policy carried out during the past few years in providing an adequate power supply and increasing the capacity of the Central Mines plant, at which 148,600 tons were crushed during the year as compared with 121,450 tons during the previous twelve months. Out of the above profit, after providing for the profits tax, dividends amounting to 37½ per cent. on the capital were distributed, £18,243 was spent in purchasing our debentures of the nominal value of £18,436—£3,436 more, that is, than were actually required to be redeemed for the period—and £5,471 was expended on plant, etc. Apart from debenture purchases, the net capital expenditure for the year, the balance of which was provided out of the then remaining proceeds of the debenture issue, was £32,110, which met the purchase of the remaining half of the farm London referred to at the last annual meeting, expenditure on the new power plant and on the wattle plantations at Elandsdrift, and the various extensions to and improvements of the plant at the Central Mines which are detailed in the general manager's report. The amount carried forward showed an increase of some £2,000 compared with the balance brought forward from the previous accounts, and amounted to £82,671 2s. 6d.

Increased Tonnage.

The reports of the general manager and of the managers of the Central Mines, Elandsdrift, and Vaalhoek give a complete account of the past year's work and the position of the various mines at the close of the year, and need not be referred to in detail. At the Central Mines, as already stated, an increased tonnage was milled. Recovery increased by nearly 2s. per ton and costs decreased by about 1s. 9d. per ton. As you were informed last year would be the case, the Clewer Mine was completely worked out before the close of the financial year, and its place as a producer taken by Duke's Hill South, a fact which, to a great extent, accounts for the recent further improvement in monthly results, as the ore drawn from that mine is relatively of a much higher value. In view of the increased tonnage milled, the increase in the ore reserves of not far short of 36,000 tons, the average value of the whole remaining almost exactly the same, is a very satisfactory feature of the report. The total reserve at the Central Mines was 385,547 tons, value 14.23 dwts. per ton, with additional 12,832 tons at dump, value about 9 dwts. per ton. The tonnage crushed at Elandsdrift was much the same as last year, but the recovery was appreciably lower, and though a satisfactory profit of £21,259 was earned, this was £5,225 below the record of 1911-12. The hyrdo-electric plant was completed in November, and has since given every satisfaction. Work on the wattle plantations progressed satisfactorily. The manager's report reflected an excellent position in regard to development.

Improved Results.

Improved results were obtained at Vaalhoek, the profit being increased to £8,394, while here, also, the development position was improved. There was nothing of moment to report in regard to outside prospecting. During the current financial year the results obtained have been most satisfactory. The profits for the first five months amounted to £130,509, averaging, that is, £26,100 monthly—or £3,000 per month more than during 1912-13. As showing the progressive nature of the increase, it may be noted that the profits for the last five months of the past financial year were just under £121,527. The Central Mines, Elandsdrift and Vaalhoek have all shown improved profits. The treatment of accumulated slimes at the Central works is now finished. During this period £3,500 have been spent on capital account apart from purchases of debentures. No further expenditure on plant, etc., is at present contemplated; small expenditure on the wattle plantations at Elandsdrift will continues. £11,404 debentures were purchased. A dividend of 20 per cent. for the current half-year has been declared to-day.

Life of the Mines.

We have recently received requests from some shareholders that a statement should be made at this meeting regarding the life of the mines at present being worked. While it was felt that no responsible mining man could commit himself to such a statement, the board realised the natural desire of shareholders to be informed as far as possible in this direction, and, being anxious to afford all the reliable information it can, the matter was fully gone into with the general manager, who recently replied: "As you rightly point out, quartz mining does not allow of estimates being made beyond the ore actually in sight and properly developed. Though this formation is sedimentary and the interbedded reefs extend through the district, they vary practically from an insignificant seam in the strata up to large bodies ten and fifteen feet thick, which are generally highly mineralised and good gold carriers, while, as a rule, their mineralisation and gold contents decrease in proportion to the decreased thickness of reef. Your company has certainly a very large area of mining ground, but in view of the foregoing no one can say what percentage of this mining ground may contain a payable proposition."

Picture of Possibilities.

It appeared to us, however, that shareholders' wishes should be met to a great extent if some picture could be given of the possibilities of our property. A schedule of our holdings is, as usual, given in the directors' report, but it may be convenient to summarise them here. We have, in round figures, full freehold and mineral rights over a hundred and fifty-five thousand acres, including the concession farms; mineral rights only, including mynpachten and claims, over twenty thousand acres; and freehold rights only over twenty-six thousand acres. Without dwelling on the scope thus afforded for further discovery of payable minerals, the following details are offered regarding the more important areas on which work is proceeding.

Concerning Properties.

What are termed the Central Mines are situated on or in the neighbourhood of the concession farm Ponieskrantz, the Central plant being pretty well in the centre of this sphere of operations, the Blyde River running past the works roughly in a northerly direction. Between the Blyde and the western boundary of the farm are situated the Duke's Hill South and Peach Tree mines, the latter including Columbia Hill and having Iota to the east, while the Dav mine lies east of Duke's Hill. At the last annual meeting I dwelt on the importance of the work which was proceeding in connecting the workings of Peach Tree and Duke's Hill mines, then some fifteen hundred feet apart, and on the possibilities of the intervening ground. Special reference was made to the progress of this work in the last quarterly report. The reef-bearing area of this section of the property is presumed to be equal to three hundred and twenty claims, of which only twenty-seven have been worked out. This area has turned out to be our best working proposition, though portions of it have proved unpayable. The Duke's Hill South mine has given excellent results, and has enabled us to maintain the high standard of profits now being made, even during last month when, owing to the scarcity of native labour, the tonnage milled at the Central plant decreased appreciably. It appears that the extension of the pay zone is toward the dip. The fact of having to put in a drive from the surface some twelve hundred feet long for the purpose of ventilation, and having to carry two of the connecting drives between this mine and Peach Tree in unpayable ground, has handicapped development operations considerably, but there is every reason to hope that as soon as these two mines are connected and development can be pushed towards the dip, it will be possible to add to the reserves much larger tonnages than hitherto. Development is being pushed in both mines, and the connection should be made in the next few months. At the

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Notes and News.

Victoria Falls. The report of the Victoria Falls and Transvaal Power Company, Ltd., for 1912 states that the year's business resulted in a profit of £446,380, making, with the balance of £45,744 at credit of profit and loss account as at December 31, 1911, remaining after payment of the dividend declared on May 23, 1912, a gross total of £492,124. The substantial increase in the revenue of £123,286, as compared with the preceding year is, it is pointed out, a noticeable factor in the company's increasing prosperity. This result was obtained notwithstanding that on October 1, 1912, the reduction in the price of power came into force in accordance with the terms of contracts with consumers, and further, that £1,000,000 of capital was unproductive, due to constructional work still being in progress. After providing for interest on debentures for the year 1912, amounting to £174,703, and for depreciation, amounting to £102,054, the balance remaining was £215,367. In respect of this balance, the directors, on June 5 last, declared a dividend at the rate of 6 per cent. per annum, less income tax, for the 12 months ended December 31, 1911, on the amounts for the time being paid up on the preference shares, leaving £96,786 to be carried forward.

* * * *

Kaffir Phonetics. A provincial correspondent sends to the *Financial Times* a list of Kaffir shares as to the pronunciation of whose names he is doubtful. While the matter is scarcely of practical importance it may be of interest to some readers. The paper states that in the first place there is no absolute uniformity on the subject; but since the majority generally rules, the practice among London Stock Exchange members often overrides the ideas of the godfathers of the companies. However, the correspondent will not go very far wrong, either abstractly or in practice, if, as he evidently assumes, he pronounces the names of most Kaffirs with Boer or semi-Boer titles as if they were German. But members who have visited Johannesburg are often more pedantic in this direction than their confreres. For instance, the letters "j," "v" and "w" are pronounced by most House men in the English way. But "Jagersfontein" is an exception, it being the custom to give the initial "j" in this case the soft "y" sound. "Ei" (or "ey") and "ie" are usually pronounced as in German, that is rhyming with "I" and "we" respectively, but many House men flounder hopelessly as regards the distinction between the two. "Rand" used to be, and is now by those who profess to know, pronounced to rhyme with "ant," but by House men generally it has been gradually Anglicised, that is, is made to rhyme with "and." Scots and Germans sound the "ch" in "Goch" correctly by instinct, Englishmen only by "swallowing their tonsils," as a well-known music-hall artist would put it.

* * * *

Harrisdale Diamonds, Ltd. A new diamond company, Harrisdale Diamonds, Ltd., has been formed with a capital of £20,000 in 5s. shares, of which one-fourth is for working capital. The property is known as the Harrisdale Estates and is situated on the Vaal River, 18 miles north of Kimberley. There are many occurrences of kimberlite both in fissure and pipe form on the property. Diamonds to a value of over £200,000 have been won from the alluvial deposits. Some extraordinarily rich finds were made some years ago in the time of the old Harrisdale Syndicate, the most famous being at the place known as Mayer's Prospect. In the light of recent developments in the Droogveld portion of the New Vaal River Estates, where a similar occurrence to that at Meyer's has been worked during the present year, with remarkable results, it is hoped to find extension of the original rich strike in Harrisdale. There are also good evidences of a mine of some importance being located on the property. All diamonds won by the company during the period of the contract, which is for three years, whether from mines, fissures or alluvial, are the property of the company. There is the right to purchase any mine found on the Romance portion of the estate, together with 500 morgen of ground, for £30,000, and on the other portion for £20,000 to £25,000 each mine.

* * * *

A Remarkable Milling Result.

Exceptionally rich strikes and remarkably high grade outputs always have a special fascination for the person interested in mining. Southern Rhodesia has repeatedly shown that it possesses some of the "richest" mining propositions on earth, and from time to time keen attention has been directed towards some fabulously rich discovery or some amazingly high grade output at one or other of the innumerable miniature mines of the country. It is a very long time, however, since we have heard of such an amazing output as that recorded by Mr. R. McConville, who is working the New Jess mine in the Gwanda district of Matabeleland. Mr. McConville in August milled two tons with two small stamps and recovered no less than 254 ozs. of gold in value £1,066! Only a few hundred tons of ore of this sort of stuff would be sufficient for most men! And imagine a really large mine of it! But on this latter point we know nothing, although we do not imagine that the New Jess contains very many tons of this jeweller's shop class of ore.

* * * *

The East Rand's Pumping Plant.

The new pumping plant which is to serve the western section of the East Rand Proprietary Mines is now practically completed; in about three weeks' time it will be wholly so. Fixing of the last two pumps was delayed by the strike, but by the end of this month the whole installation will be finished and crosscutting to intersect the reefs south of the dyke will have commenced. The completion of this scheme will mean much increased scope for the prosecution of development operations in the East Rand Proprietary, whilst the ability of that company to cope with all water in the western section of the proposition will have a favourable effect on the adjacent Witwatersrand Deep mine.

* * * *

Half-Year's Company Registrations.

The *Investor's Guardian*, in its usual half-yearly review of the new company registrations in Great Britain for the first half of the current year, says that it may be taken as an axiom in the science of company promotion that the long continuance of a high bank rate is fatal to the general buoyancy without which nothing worthy of the name of a "boom" is possible. "A high bank rate" is the synonym for "dear money," and with dear money the professional promoter draws in his horns and awaits a more congenial atmosphere. It therefore comes as no surprise to find that the capitalisation of the new companies registered during the half-year ended June 30th last is only £73,544,437, a decline of over 18 millions as compared with the same period of last year, of 11 millions as compared with 1911, and of 57 millions when compared with the rubber-boom-six-months of 1910.

* * * *

A Cure for Labour Troubles.

Report comes from West Virginia of a sovereign cure for labour troubles. In the light of current labour events, this cure might be of some value to our miners. It seems that the Weyanoke Coal and Coke Company, after long suffering with transient labour, the "hobo" miner, devised the scheme of offering prizes for the best gardens, flower and vegetable. After a year of suspicion on the part of most of the employees, the sight of a few real gardens and of the real money prizes made the next year a bonanza garden year for that camp. The beneficient influence of gardening is said to have given the company a corps of steady, orderly, contented, æsthetically inclined, and well-fed miners. Steep country, rocks and aridity will militate against the adoption of this remedy in many mining camps, but even under such discouraging conditions, one often sees rather pathetic attempts to till the soil. A little patch of earth in the corner of a valley coaxed by irrigation with tailing water to support some hardy beans and radishes is a not uncommon sight. Education and help along such lines will often repay a mining company. The relative reliability of the married man with a family is well recognised and he is always considered a desirable element in a camp. Naturally, when a miner owns his house, garden and stock, he is still more likely to stick to his job.

* * * *

Over-estimating the Cost of Equipments.

A series of articles of particular interest to engineers and mining men generally have recently been appearing in *The Mining and Scientific Press* of San Francisco, on "Under-estimating the Cost of Milling Plants." We all know that installations have a playful habit of costing more in practice than they were expected to in theory, even after the most careful and liberal calculations. Whilst in some cases—as for instance the Van Ryn Deep—the expenditure incurred by Rand companies is well within the estimate, the more general experience on the Rand as elsewhere is that the total expenditure comes to more than was anticipated. This aspect of the metallurgical engineer's work is very fully dealt with by Mr. C. O. Schmitt in Volume II. of "Rand Metallurgical Practice." But the subject is such an immense one there are aspects to be considered which probably even Mr. Schmitt has not fully covered in his very comprehensive work. At any rate it should be of interest briefly to note one view of Mr. A. Sydney Addition, the American expert, who contributes to *The Mining and Scientific Press* on the subject. Mr. Addition evidently thinks the human factor is answerable for a good deal in regard to over-estimation. He writes: "The exact amount of skilled and unskilled labour necessary for installing equipment is somewhat difficult to estimate. It differs from estimating material, owing to the consideration necessary to be given to the 'human factor.' However, an estimate can be made that will work out to within one or two per cent. of the actual cost, if sufficient thought is given to the details of labour necessary, when preparing the figures. It is customary to arrive at the estimate of labour either from the advice of machinery dealers, or from the past experience of estimator. Both are generally at fault; the first through the lack of experience in the field on actual construction, or from off-hand guessing, the second through failure to correct his figures to suit the conditions governing the case in hand. Both systems lead to excess cost. In addition to these two causes some other important reasons for excess cost of labour are: (1) Error in the selection of a foreman, and failure to recognise his importance and responsibility; (2) lack of perfect organisation; (3) failure to recognise the importance of many of the factors discussed above in leading to excess cost, and to make proper allowance for the same; (4) failure to provide a proper number of unskilled labourers to assist the skilled labourer; (5) the employment of a foreman or labourers for any other reason than because of their efficiency; (6) failure to make men contented."

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1912 in Manicaland.

The principal occurrences affecting the Manicaland mining industry during 1912 and its position at the beginning of 1913 are reviewed by the Director of Mines in the current issue of the *Mining Journal of the Mozambique Company*. During 1912, he says, prospecting has been restricted and this branch of the mining industry has not expanded as it was hoped. This region is almost entirely dependent on Rhodesia for its prospectors and only very few prospectors have come down to this district, though in the latter portion of the year more individuals interested in mining have visited this region from Rhodesia than in the earlier months of the past year. The number of claims in force in the district at the end of the year 1912 amounts to a figure slightly in excess of the total number of claims in force at the same date in the preceding year, viz., 2,674. The two chief occurrences of the past year in mining matters have undoubtedly been the successful prosecution of alluvial prospecting work on the Revue by the Andrada Mines, Ltd., and the favourable opening up of the 120 foot level on the Bragança Mine belonging to the same company. The prospecting on the Revue alluvials that was carried out throughout the dry season of 1911 was resumed in July last, the work being accomplished by means of shafts and of a keystone drill, and the accumulated results of the two seasons' prospecting are in the opinion of the representative of the company interested so satisfactory that a dredger and a large amount of machinery for the erection of an electric generating station and of a high-tension power transmission line have already been ordered and it is probable that actual dredging will be commenced towards the end of the present year 1913. The opening up of the 120 ft. level on the Bragança has also resulted in the exposure of a large quantity of ore that the management consider to be of a highly satisfactory value, and the development of this property effected during the year bids fair to warrant the likelihood of the establishment of a mine of value and certainly promises a much increased output for this district in the coming year. The smaller propositions during the year have been worked with fairly satisfactory results, more especially the proposition belonging to Mr. Dias Pereira and known as the Chimezi-Rhodes-Banket. The total gold production for the year amounted to 2,407·76 ozs. fine gold of a value of £10,111 14s. 2d. This output is small, but from the foregoing remarks it will be seen that 1913 opens with a promise of better things.

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South-Western Transvaal Diamonds.

Details of the diamond returns for August from the South-Western Transvaal fields—appearing elsewhere in this issue—show a total of 7,467⅝ carats, value £33,344 12s. 6d., as compared with 7,735 carats value £39,843 11s. in July, and 7,252⅛ carats value £43,735 18s. in June. Bloemhof still leads the way, although its output, like the majority of the areas, is behind previous months. With 350 separate returns, it shows a total of 1,651⅝ carats, value £6,891 3s., the best individual returns being £258, £163, £157, £135, £135, £124, £112, £111, and £106. The best stone found was an 11-carat, value £144.

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The Contract System Condemned.

Mr. Langley, the Kimberley Inspector of Mines, in his last annual report, remarks that "a happy hunting ground for the professional agitator has always existed in the Transvaal, and the cause for the unrest has principally been occasioned through the policy adopted by the mine authorities. One of the chief causes has been the contract system, which is a doubtful economy." He proceeds: "A contract is given to a miner, which, owing to the varying conditions, may be under or over paid. If the former, the miner soon realises the position, and he becomes a man with a grievance. If the latter, he usually fails to appreciate this, and the wage earned is, in the opinion of the miner, his true worth. He places a fictitious value on his services, and consequently he is discontented when he is rated at his proper worth. The system also lends itself to the practice of 'farming' easy jobs; either in trying to fool the authorities in order to get the contract price raised or by doing just sufficient work to draw the highest pay without being cut. Another reason for unrest, about which much discussion has taken place, arises through change of management and officials, which often causes a general sweep throughout the mine. Even if a man may wish to settle down and not hunt that 'will o' the wisp,' the £80 contract, he never feels secure. In this district the contract system has been abolished, and no change in the management or officials has taken place during the year."

TOPICS OF THE WEEK.

INDUSTRIAL CONDITIONS.

To the discussion on living conditions on the mines, the cause and cure of industrial unrest, several notable contributions have been made since our last issue. On Saturday night the annual dinner of the past students of the Royal Technical College, Glasgow, provided an occasion for some very plain speaking from Mr. William Cullen and Sir J. W. S. Langerman on the subject. At the Unionist Party Club, on Tuesday, Sir Lionel Phillips went into the whole question of labour disputes at length, and showed very clearly the special and peculiar complexities that beset the problem on the Rand. That there is considerable diversity of opinion regarding the questions at issue is seen from a glance at the divergent views expressed. Thus, Mr. William Cullen, a close student of social conditions on the Rand and a thoughtful observer, is convinced that the recent unrest had its origin in insecurity of tenure on the mines and in a lack of sympathy between employers and employed. Mr. E. J. Way admits the former, but is equally convinced that the root of the insecurity lies in the insatiable wanderlust of the miner himself, and he is prepared to prove it to the satisfaction of the Economic Commission. Sir Jan Langerman, whose speech of last Saturday night was not reported, fully endorses Mr. Cullen's contention in regard to lack of sympathy, and for one who was, up to a year ago, himself a responsible leader of industry seems to take up rather a self-condemnatory line in regard to the employers' treatment of their men. To all these criticisms, it seems to us Sir Lionel Phillips made a very fair and convincing reply on Tuesday night. He recognises the uses of Trade Unions and the advantages to the men of collective bargaining. Towards the glib talk of a minimum wage and wages boards he is less favourably inclined. These questions are too complicated by the presence of the native worker to be answered by a rule-of-thumb adherence to the practice of other industries and countries. He knows the Rand worker too thoroughly not to perceive that the professional mischief-maker is the real cause of recent discontent, and the men's improvidence in most cases their own worst enemy. No one is in a better position to obtain first-hand information on the real position of the Rand worker than Sir Lionel, and no one has given closer or more painstaking attention to the social problems of the men on the mines. He is no out and out apologist for the maintenance of things as they are. Far from it. Where reforms are necessary and possible, there is no one more anxious than he to carry them out, and in directions too numerous to detail here he and his House have of late years been unceasingly active for good. Nevertheless the very full and frank discussion of these questions from every point of view is to be welcomed. Out of the welter of opinions, suggestions and ideas, the fact emerges that people are now awake to the value and importance of the human factor in the industry. Before the recent strike those of us who ventured to plead for more sympathy and attention to the needs of the worker on the mines were met with the objection that the men were so well paid and independent that any such molly-coddling of them would have a bad rather than a good effect. Now the consensus of opinion from those who think with Mr. Cullen and Sir J. W. S. Langerman seems to be all the other way. They are all for more sympathy between employer and employed on the Rand as an offset to the not disinterested efforts of the agitators to promote discord and disunion. On the principle that "the man who is your enemy is the man you don't know," they appeal for closer acquaintanceship between employers and men. Without going more deeply into the question of the degree of blame which attaches to either side for failure in this respect in the past, it is reasonable to expect that the result of the present discussion will be a searching of hearts on the part of those concerned and a [illegible] than elsewhere, known as social service, having for its excellent object the amelioration of the lot of the worker.

THE OFFICIAL VIEW OF NATIVE LABOUR AND THE SRIKE

Several innovations marked the meeting of the Chamber of Mines held last Monday. In the first place the meeting, owing to Thursday being mail day, will henceforth be held on Monday, and the practice of monthly meetings has been discontinued in favour of less frequent gatherings of the chief representatives of the industry. To Mr. John Munro, the President, fell a task of more than usual difficulty, since the period to be reviewed was one of the most momentous in the history of the industry. He did not shirk the issues, however, but made a very explicit and emphatic pronouncement on the real causes of the strike, the effect of the latter on the native labour supply, and the necessity that existed for all to combine in reassuring the native mind that the trouble was now over. Mr. Munro had no difficulty in showing that the grievances subsequently formulated were not the cause of the strike. "The real cause," he said, "is rather to be found in the desire of the Federation of Trades Unions to be recognised by the mining industry as the sole medium for the settlement of disputes between employers and employed. To this the industry will not agree; but, desiring to establish friendly relations with its employees, it has offered to recognise the Transvaal Miners' Association on conditions which have been published, and which, therefore, I need not repeat. Important concessions have already been made, which have been characterised by the Government as 'very substantial.'" It cannot be denied that one of the most unfortunate consequences of the recent strike has been the feeling of unrest created in the native mind. From the official statement it may be seen that the number of natives in the employ of members of the W.N.L.A., including natives in the service of contractors, but excluding natives in the employ of members of that body in the districts of Barberton, Breyten, and Rooiberg, was 180,631 on the 31st August, as compared with 222,051 on the 31st May. This shows a reduction of 41,420 natives for the months of June, July, and August, the loss on the gold mines alone since the 31st May being 39,421. We have always to expect a wastage during these months, but on the 31st August last year there were 23,180 more natives in the employ of members of the association than there were on the 31st August of this year—that is to say, 6,416 less East Coast boys, 14,328 less B.S.A. boys, 2,130 less contractors' boys, and 306 less tropicals. The recruiting returns up to last Saturday showed a marked improvement in September as compared with the previous two months, but the natives taking their discharge are still in excess of those coming forward, and a further shrinkage this month is regarded as inevitable by the President of the Chamber. Every endeavour is being made by the Witwatersrand Native Labour Association and Native Recruiting Corporation to restore the native labour supply to its normal level, and Mr. Munro pointed out that "everyone coming in contact with natives can assist this very desirable end by refraining from making incautious remarks tending to create anxiety in the native mind, and so rendering him reluctant to seek employment on these fields." The unfortunate position created has necessitated the retrenchment of a large number of white employees. The number dismissed, however, is far less in proportion to the decrease in the supply of native labour, as efforts have been made to retain the white men in employment as far as possible. In support of this statement Mr. Munro showed that the number of natives employed on the gold mines was about 20,000 less on the 31st August this year as compared with the same date last year, whilst the decrease in the white men amounted to barely 1,100. As the proportion of white to coloured is roughly 1 to 8, the dismissals on the 31st August should have been in the neighbourhood of 2,500. Mr. Munro mentioned that the Witwatersrand Native Labour Association and the Native Recruiting Corporation will give evidence as to the conditions of employment of natives before the Native Grievances Commission, and the mine managers with respect to matters affecting their particular mines. As these individuals and institutions appear to be the best qualified to give evidence required by the terms of reference, at the present time, therefore, the Chamber does not propose to tender any general statement on behalf of the industry. Dealing with the vexed question of the Government Mining Engineer's annual report, Mr. Munro, after paying a tribute to the value of the document as a statistical work of reference, pointedly added:—"In one or two respects, however, the report is a remarkable one. I refer more particularly to the discursive portion of Mr. Kotze's contribution with regard to the health conditions on the mines; and I find it most difficult to reconcile some of the statements made by him with statements made by the Secretary for Mines, by the mine inspectors, and by himself before the Select Committee on European Employment. The reports of the Secretary for Mines and the district inspectors clearly indicate that the leaders of the mining industry are fully alive to the necessity of improving the health conditions of the mines; no expense is spared to this end, and it is the fixed determination of everyone interested in the industry not to abate in the slightest degree the efforts which are being made to bring the mines of the Rand up to the standard of the healthiest mines in other parts of the world. This, however, can only be done with the whole-hearted co-operation of all mine employees." Various other matters of industrial interest were reviewed by Mr. Munro, but the foregoing represent the official view of the Chamber on the big labour issues before the industry.

LABOUR TENDENCIES.

Recent events on the Rand have lent a new interest and significance to the movements of organised labour elsewhere. Thus the annual Trade Union Congress, which was held in Manchester recently, and of the proceedings at which an account appears in this week's mail papers, serves to remind us that there appears to be a fresh series of labour movements in the British coal industry, notwithstanding all the concessions which have been made to miners in the immediate past. High wages seem to be the signal for new demands, particularly of late, and perhaps the reason is not far to seek. Indeed, there is a great deal of the element of "make believe" about the way in which labour matters are treated. We are apt to seek abstruse reasons for the recent and continued unrest among manual workers of all classes, and many profound economic and social theories are advanced to account for it. We are told, among other things, that the purchasing power of gold has declined, thus increasing the cost of living, that the spread of what, with unconscious irony perhaps, is called "education," among workmen has led to the conception of higher ideals and that Labour has at length awakened to a sense of its importance as a producer of wealth. There may be much in some of these theories, but far more commonplace and commonsense explanations lie readier to hand. The workmen in the United Kingdom—in South Africa, of course, conditions are different—want better pay for their work, and the difficulty they find in getting it is the cause of their discontent. To ask why they want more is as absurd as to ask why a man prefers a shilling to sixpence. In the same way the facts about industrial agreements, upon an enquiry into which the Industrial Council solemnly entered some fourteen months ago seem sufficiently clear to require no further elucidation. It is common knowledge that of late the whole principle of collective bargaining in Great Britain has received a severe blow owing to the failure of Trade Unions to keep faith with individual employers, or with groups of employers. Agreements solemnly ratified by representatives of both parties to them have been broken again and again on some flimsy pretext or other by Trade Unions. It would certainly seem that some strong measures are necessary to check the disregard of industrial agreements, such as a compulsory monetary penalty, although the Industrial Council prefers to rely upon "moral influence." There are not many signs of this "moral influence" about the action of the miners in South Wales now who are asking for an advance of 15 per cent. in the wages of surfacemen in distinct breach of the Conciliation Board agreement, which does not terminate until 1915, but which the Miners' Federation of Great Britain is apparently quite prepared to disregard.

THE WITWATERSRAND COMPANY'S NEW PLANT.

Five Tube Mills Completed—Probable Effects on Tonnage and Extraction—The Company's Excellent Outlook.

The new plant at the "Knights [illegible] Witwatersrand, mine which embodies five tube mills and additional slime plant is now virtually completed and [illegible] ready to commence work about the middle of this month provided the native labour position admits of this being done. The Knights mine has been exceedingly short of coloured labour for some time past.

Good Underground Work.

At present only 1,100 boys are employed underground whereas the normal complement is 1,600. Despite this very acute shortage excellent work is being done at the mine. Last month the output was about 1,700 tons per working day which is equivalent to approximately a ton and a half per native per diem, an achievement which it is hardly necessary to state is an uncommonly good one. A tonnage of about 37,000 is being crushed per month, and this with an average of 215 stamps dropping. The Knights battery, it should be explained, contains 225 stamps. A good proportion of the Knights equipment dates from the very earliest days of the Witwatersrand, and some little time ago the renovation of the mill was commenced, the stamps being renewed in batteries of ten at a time. About 80 heads, including those most in need of repair, have now been renovated, but until the whole mill has been put into repair ten stamps must necessarily be idle. With an average of about 218 heads dropping the Knights mill has crushed up to 41,000 tons in a month with 600 mesh screening, but the present normal capacity, given a full complement of labour, cannot be placed at over 40,000 with 600 mesh screening in the mortar boxes. During the past two months 800 screening has been employed, and the residues last month were estimated to contain ·487 dwt. fine gold per ton, as against over ·5 dwt. per ton when 600 mesh was used.

The Question of [illegible]

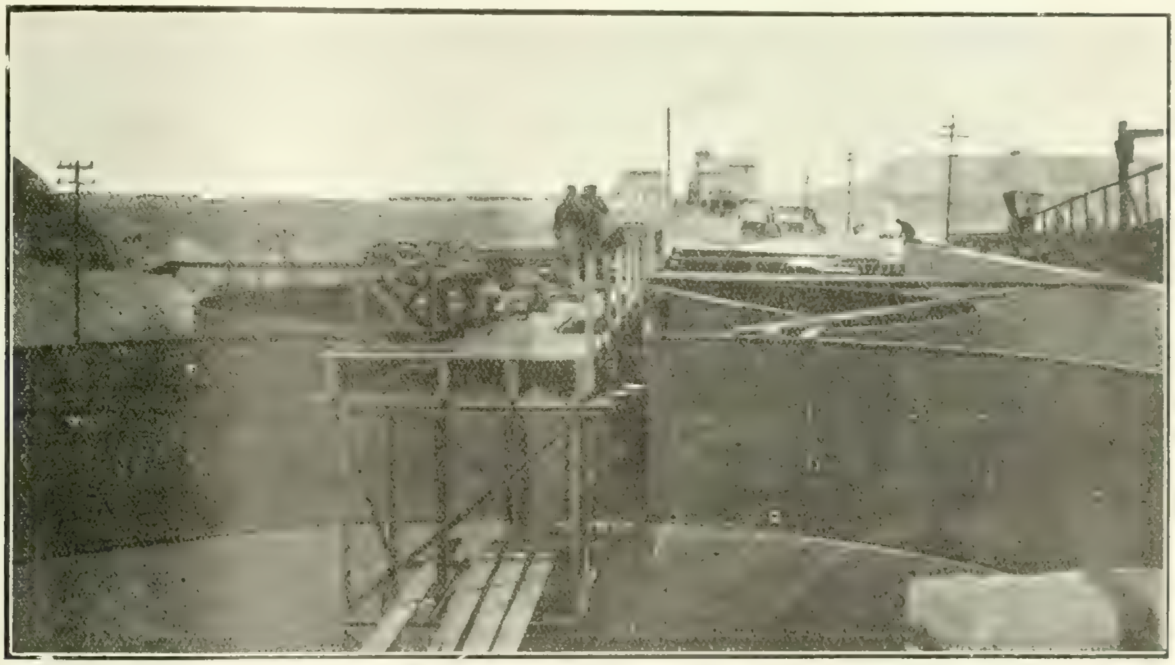
In order to realise the [illegible] to the company [illegible] month represented by ·487 dwt. going into residues for each ton milled it may be remarked [illegible] in September gold worth £3,800 was discharged on to the dump. It will thus be evident there is room for improvement in regard to extraction at the Witwatersrand Company's plant, and it was for this primary reason that erection of tube mills and additional slime vats was decided on some little time ago. When the new fine grinding installation is fully at work residues, it is estimated, will be reduced to ·25 dwt. per ton value. In other words the loss represented by gold sent to the dump will be halved. An increase in the quantity of ore milled per month will also be practicable although the additional tonnage crushed will have to be carefully considered in relation to screening and extraction. However, under normal circumstances the new plant should admit of about 45,000 tons per month being milled. Not only will the running of the new tube mill equipment thus mean an improved percentage of recovery but it will also mean the crushing of another 5,000 tons per month, and this in turn should result in a further economy in regard to working expenses, although it must be admitted costs have been reduced to a very low and creditable level indeed at the Knights.

Details of the New Plant.

In the erection of the new fine grinding equipment the management of the Knights mine has had to make the best of the limited space available, and the results reflect considerable credit on all concerned. The tube mills are housed next to the mill and the whole plant is compact and workmanlike. There are five tube mills, each 16 ft. 6 ins. by 6 ft. in diameter (of similar dimensions to the tube mills at the Van Ryn Deep and Consolidated Langlaagte) fitted with Schmidt feeders and Osborne liners. They will be electrically operated, power supply having been arranged for with the Victoria Falls Power Company. The drive end is the discharge end in the case of each mill. Accessory portions of the new equipment are Caldecott classifying cones arranged above the tube mills and Allen sand pumps with launders, pipes, etc. Adjacent to the tube mill house is the plate house, where twenty stationary plates—four to each tube mill—have been erected. The slime plant has been [illegible] two collecting [illegible] and [illegible] all necessary [illegible]

The Deep Level Section.

Apart from this new plant the most interesting portion of the Knights mine at present [illegible] shaft which encountered the reef at 2,300 feet. This shaft has



New Slime Tank, Witwatersrand G.M. Co.

been sunk to exploit the long deep level [illegible] the property and this section will be attached [illegible] means of a separate incline. On account of shortage of unskilled labour sinking work here was suspended about two months ago, but it is now proposed to resume operations again. Development in this deep section has given very encouraging results. The position of the Knights mine generally may indeed be said to be eminently satisfactory at present, and as the new tube mill plant is practically ready to commence work any improvement in the labour position should meet with a sharp and ready response in the shape of larger profits from this fine old mine.

TWO GOLD FIELDS' MINES.

Simmer and Jack and Sub Nigel Meetings—The Year's Results Reviewed.

Annual meetings of two important companies under the control of the Consolidated Gold Fields of South Africa have just recently been held in Johannesburg. The speeches delivered from the chair are given very fully elsewhere in this issue. We here attempt brief reviews of the outstanding features of the year's work at these two propositions.

Position and Prospects of the Simmer.

Time was when the Simmer and Jack with its 320 stamps boasted the largest gold milling plant under one roof in the world. It can no longer lay claim to that distinction, since both the Randfontein Central and the Knights Deep possess larger milling plants, but it is still one of the Rand's foremost producers, and during the year ended with June 30th last it mined close on a million tons of ore. Despite a decline in the average recovery value of the ore milled of 2s. 8·6d., the Simmer and Jack Company during the year ended with June 30th last distributed two dividends of 7½ per cent each, absorbing £450,000. The rate and amount are thus the same as in the previous year, but the profit on working during the last twelve months has been £471,954 as compared with £529,944 in the previous year. After adding sundry revenue, rent, interest, etc., and deducting profits tax, amounts written off, etc., the total profit stands at £459,362 as compared with £511,355 for the previous twelve months. This decline in recovery value was to some extent offset by (a) the milling of 48,700 more tons, and (b) a decrease of 9d. per ton in working costs, but as will be noted in the foregoing statistics the combined effects of greater tonnage and lower expenditure were not able to stem the tide of decreased grade. The ore reserves reflect a decline in average grade of 8½d. per ton, but the officials of the company think that the grade of the ore sent to the mill should be maintained throughout the current year. Another point which shareholders have to bear in mind is that the time is rapidly approaching when there will be a considerable diminution in the quantity of ore derived from the outcrop and upper levels of the property. This ore has been the most accessible and has tended towards cheap working. Ore of this nature, it is hardly necessary to state, is especially valuable at a time like the present of acute labour shortage. The loss of ore of this nature will be undoubtedly felt by the company, but shareholders may undoubtedly seek consolation from a knowledge of the Simmer's abilities to work very cheaply. For the twelve months ended [illegible] last the average working costs were only a fraction over 11s. 1d. per ton, and [illegible] no doubt the management has still a little up [illegible] which could bring the cost of working down a little further. Ore reserves like the grade evidence contraction. On a basis of fully developed mining tons there has been a reduction from 3,033,000 at June 30th, 1912, to 2,524,000 at June 30th, 1913. For new points of attack for the development of ore in good time to guard against undue depletion of the reserve the [illegible] of the mine is [illegible] vigorously opened out. This area will be developed from No. 2 deep level auxiliary incline shaft, which already has been advanced a distance of 385 feet, and is being continued towards the southern boundary of the property. [illegible] and Main Reef have been intersected in the 32nd level crosscut from this shaft, and it is hoped shortly to commence the 33rd level crosscut to the reef.

The Sub Nigel's Year

Of a totally different nature to the great Germiston proposition is the Sub Nigel. In the case of the Simmer the mine is a huge one of low grade character and equipped with a large mill. The Sub Nigel, on the other hand, is a concern with small equipment, meagre capital and a high grade but much broken reef. Despite many difficulties the company crushed 3,844 more tons during the year ended with June last than in the preceding twelve months, improved its recovery by about 3s. per ton, and decreased costs by 2s. 2d. As a result the Sub Nigel entered the dividend stage, paying out 5 per cent. in December, 1912, and 2½ per cent. in June last. Improvement, too, was effected in the underground position. The fully developed ore reserves of the company at 30th June, 1912, were estimated to be 85,000 milling tons of an average mill value of 8·9 dwts.; this is equivalent to 113,300 mine (or unsorted) tons of an average value of 6·93 dwts. The estimated reserves at 30th June, 1913, were 132,500 mine tons, fully developed, of an average value of 7·8 dwts., and 39,500 mine tons, partially developed, of an indicated grade of 8·1 dwts. It may be recalled that the reef in "E" shaft was intersected on the 24th July last at a distance of 1,745 ft. on the incline, or a vertical depth of 1,251 ft. below the collar of the shaft, the average of ten samples taken around the periphery of the shaft at the point of intersection being 1·8 dwts. over a width of 6 inches. East and west drives were started from the point of intersection, and at the end of August had been advanced 85½ ft., the latest sampling indicating an average of reef value of 4·23 dwts. over 7·54 inches. Development in this large unexplored area of the mine will be continued as rapidly as possible, but it is feared that a considerable time must elapse before sufficient information becomes available as to the position of the dykes in the neighbourhood of "E" shaft, as well as to the position of the reef on either side of them and some indication of its value. An additional tube mill was installed during the year, the foundations of 20 stamps renewed, and certain alterations to the sand and slime plant, etc., effected, in order to increase the capacity of the reduction works to 5,000 tons per month. The mine is much troubled at present by scarcity of native labour, but the outlook is far from unsatisfactory. An improvement in the native labour situation should mean the payment of another dividend at the end of the year.

Pilandsbergs.

The Pilandsberg Diamonds and Minerals, Ltd., has secured the right to acquire an option over the farm Saltpetrepan No. H. 119, in the district of Herbert, C.P. Prospecting operations are in progress, and the manager reports that tests at different points have proved a mine, and that the quantity washed has yielded diamonds at the rate of twenty to twenty-five carats per one hundred loads, the value being estimated at £2 to £3 per carat. An ample supply of water is available, and a larger washing gear will shortly be installed.

Premier Diamonds.

The directors of the Premier (Transvaal) Diamond Company notify the declaration of the preference dividend (No. 18) of 12½ per cent. (6s. 3d. per share) for the half-year ending October 31, payable to shareholders registered on that date.

MANAGER AND STAFF OF THE DURBAN ROODEPOORT DEEP, LIMITED.

Sitting First Row (left to right): L. F. H. D. Campbell (Storekeeper), A. Gribble (Foreman Timberman), L. E. Blagden (Mine Captain's Clerk), K. F. Ferguson (Cyanide Foreman), F. E. Robson (Junior Timekeeper), E. Sims (Assistant Timekeeper), F. H. Rogers (Head Sampler), R. S. Thorburn (Assistant Surveyor), J. B. Pardon (Surveyor's Draughtsman).

Second Row: Dr. J. G. Milne (Benefit Society Medical Officer), G. A. Webb (Electrician), T. E. Thompson (Compound Manager), H. Nightingale (Mine Captain, Western Section), C. K. Pitt (Underground Manager), A. P. Rouillard (Manager), T. G. Kay (Engineer), S. G. Clark (Mine Secretary), J. B. Polglase (Mine Captain, Eastern Section), A. R. Stacpoole (Cyanide Manager), C. Chater (Assayer), F. A. Hale (Hospital Superintendent).

Third Row: A. Rigney (Assistant Surveyor), G. Hutchinson (Foreman Smith), F. White (Foreman Carpenter), J. A. Plint (Shiftboss), A. Louw (Shiftboss), W. J. Parsons (Shiftboss), G. Horne (Shiftboss), H. E. Thwaites (Native Timekeeper), J. J. Davidson (White Timekeeper), S. W. Wright (Assistant Timekeeper), R. H. Clarence (Underground Native Overseer).

Fourth Row: A. L. R. Laroque (Shiftboss), J. D. Scott (Clerk), J. Grant (Foreman Timberman), B. R. Lloyd-Jones (Shiftboss), W. A. Stewart (Foreman Timberman), T. P. Scott (Engineer's Draughtsman), A. Ross (Foreman Fitter), C. N. Harrison (Shop Foreman), W. D. D. Erskine (Assistant Assayer), R. M. H. Murray (Mill Foreman), W. M. Law (Mill Manager), J. D. Rankine (Mill Night Foreman), M. A. Thomas (Surveyor).

Fifth Row: T. F. Harold (Shiftboss), C. Kreutzfeldt (Pump Foreman), F. C. Lee (Assistant Timekeeper), C. K. Carter (Assistant Storekeeper), J. D. Thompson (Assistant Sampler), K. H. Owen (Assistant Sampler), W. B. Simmons (Assistant Sampler), A. Antoine (Assistant Sampler).

ORE CRUSHING UNDERGROUND.

Interesting Developments at the Knights Mine—No Deleterious Effect on Mine Air.

The Witwatersrand Gold Mining Company has just recently inaugurated a system of underground ore crushing. On the fourteenth level a Hadfield's jaw breaker has been installed, and the results secured are stated to be thoroughly satisfactory. Some of the stopes in the Knights Mine are very large and pieces of rock of considerable size which are liable to foul the grizzley are broken. In order to economise with native labour and to dispense with boys hitherto engaged in breaking up these large rocks and to render them available for other work, a rock breaker has been installed, the discharge from which is fed direct into the shaft bins. This, we believe, is the first rock breaker to be employed underground in South Africa, and its installation at the Knights Mine may lead to adoption of the system at other mines along the Main Reef series. Especially advantageous should underground breaking prove at a time like the present of acute labour shortage. Underground rock breaking is practised in other mining fields. In the Round Mountain Mining Co.'s mine, at Round Mountain, Nevada, are two crusher stations. During the year 1912-13 the following work was done: No. 1 produced 6,382 tons of $4·69 ore, and 16,306 tons of waste worth 77c. per ton; while No. 2 produced 15,590 tons of $7·12 ore, and 40,589 tons of waste worth 97c. per ton. The cost of crushing, screening, and transport, including repairs, was 5c. to 6c. per ton. In commenting on this a few weeks ago we remarked that it was quite conceivable that under certain circumstances underground crushing would prove a profitable operation, and we then expressed the opinion that the running of crushers underground might have a deleterious effect on mine atmosphere. We have made careful enquiries regarding the effect of underground crushing on mine atmosphere at the Knights and we are officially informed that the breaker is giving no trouble in this respect whatever. The crusher station is surrounded by atomisers, and the amount of dust created is said to be infinitesimal. Having regard to this testimony it seems by no means unlikely that the system will be extended to other mines along the Reef. One can quite understand that at many properties the operation would mean very substantial economies in mining charges.

PROFIT ASPECT OF THE INDUSTRY.

How 1912 and 1913 Results Compare—The "Strike" Month and its Consequences.

The aggregate profit earned by the Witwatersrand mines for the month of August was £1,026,851, as compared with £785,263 in July, when operations were so adversely affected by the strike. The recovery per ton in August was 27s. 1d., as compared with 27s. 6d. in July. Working costs were: July, 19s. 4d. per ton; August, 17s. 7d. per ton; and working profits were: July, 8s. 5d. per ton; August, 9s. 6d. per ton. The aggregate profit result for August, although constituting a very marked advance on the July operations, reflects the pinch of the native labour shoe in the returns of numerous companies, and it would be folly to blind one's eyes to the fact that the prevailing scarcity of unskilled coloured labour acting in conjunction with the special expenditure incurred during the strike must have an unfavourable influence on the dividend declarations of certain companies for the current year. Native labour is now reported to be coming in more plentifully, and before the close of 1913 it may yet be possible to, in some measure, redeem the situation. But in any case a number of important mining enterprises are bound to find that the profits of the current year have suffered severely as a consequence of the strike and the aftermath of the strike. Within the past few months three Rand companies, the Lancaster, the Cinderella Consolidated and the Jupiter, have ceased productive operations. Only one of these—the last-named—is on the dividend-paying list, and it should be remarked that this company's declarations have been few and small and that no dividend was declared for the last six months. However, the erasure of these names from the productive list must be regarded as symptomatic of the present strained position of mining in the Transvaal.

Bright Features.

The bright feature in regard to individual concerns at the present is the Van Ryn Deep, where excellent returns are being secured and where the results of development continue to be satisfactory in the extreme. The profits earned by this mine during the final months of the year will, no doubt, do much towards counterbalancing the decline in profit recorded by other mines. At Geduld, too, where a new plant has recently been started up, it is confidently expected to record better profits in the next two or three months, whilst at the Witwatersrand the completion of the new surface equipment can be relied on to assist in improving the profits.

August and July Figures.

Contrasting the profit returns of individual concerns for the months of August and July it is noticeable that practically all the larger propositions increased their earnings. The East Rand Proprietary, for example, well nigh doubled the profit of £44,098, which was all that company could earn in the strike month. Randfontein Central's profit advanced from £68,524 to £84,043, whilst the Crown Mines, which almost maintained its earnings in July in a manner which demonstrated the great inherent stability of this concern, showed an improvement of £9,000, or 1d. per ton milled for the month. Brakpan, Simmer and Jack, New Modderfontein, New Kleinfontein, and numerous other large concerns record much larger profits, but it is at the same time disappointing to find that the August profits of some important mines fell below the totals recorded for July—the strike month. The City Deep, for example, earned £21,395 in July and £19,766 in August, or a decrease of one shilling per ton milled, whilst the Bantjes Company's profit which was £6,819, or 5s. 11d. per ton, in July, was only £2,543, or 2s. 6d. per ton, in August. The large decline in the City and Suburban's profit is readily understood when it is remembered that the July profit of £38,961 included £20,961 from special clean up. Both the Modder B. and the Langlaagte Estate record slight decreases on the July figures. No doubt these declines are in large measure, if not wholly, attributable to shortage of unskilled labour, which was more acute during August than in the month of the strike itself. For the whole Witwatersrand the profit for the first eight months of 1913 amounts to £8,329,256, or 9s. 6d. per ton, and for the outside districts £331,234, or 16s. 3d. per ton. The total Transvaal profit for this period is thus £8,660,490, which compares favourably with £8,633,567 earned in the corresponding period of last year. On the average slightly lesser numbers of stamps and tube mills have been in operation. Notwithstanding this the ore milled has been about three-quarters of a million tons more. The production evidences a decline of over £200,000, but as already stated, the aggregate profit is somewhat larger, a fact which speaks eloquently for the stability of the industry as a whole.

RESULTS T[illegible]

The following table, whi[illegible] th the salient [illegible] of the gold industry of the Transvaal for the eight months [illegible]th, August l[illegible] [illegible] for the corresponding period of last year, should at this juncture be of considerable interest:—

Month.	ORE TONNAGE. (1 ton 2[illegible]) Tons Milled.	STAMPS. Number at Work.	STAMPS. Duty per Stamp per 24 hours.	Number of Tub[illegible] Mi[illegible] at Work.	YIELD. (1 fine ounce £[illegible]·4773). Total Output. Value. £	Total per ton milled. s. d.	WORK[illegible] [illegible] AND PROFITS.* [illegible] s. d.	[illegible] £	[illegible]	[illegible]
January, 1913 ...	2,317,[illegible]	10,009	8·[illegible]	286	3,353,116	27 11	18 2	1,153,728	9 10	[illegible]
January, 1912 ...	2,114,394	10,068	7·92	257	3,130,830	27 8	18 11	1,021,073	[illegible]	[illegible]
February, 1913 ...	2,146,[illegible]	9,928	8·80	285	3,118,352	28 2	18 4	1,057,196	9 11	13,487
February, 1912 ...	2,026,140	10,016	8·06	263	2,989,832	28 5	19 3	930,739	9 3	25,987
March, 1913	2,373,273	9,987	8·80	285	3,358,050	27 7	17 9	1,162,385	9 10	370,845
March, 1912	2,214,624	10,088	8·18	262	3,528,688	28 4	19 0	1,245,321	9 2	257,528
April, 1913	2,356,204	10,046	8·85	285	3,334,358	27 8	18 0	1,140,192	9 8	53,750
April, 1912	2,106,150	9,991	8·20	263	3,133,383	28 10	19 2	1,042,076	9 10	75,250
May, 1913	2,425,333	10,102	8·79	290	3,373,998	27 3	17 9	1,141,202	9 5	[illegible]
May, 1912	2,227,532	10,073	8·21	266	3,311,794	28 9	18 11	1,110,463	10 0	46,000
June, 1913	2,234,368	9,922	8·73	283	3,173,382	27 9	17 9	1,10[illegible]	9 11	3,526,129
June, 1912	2,158,722	10,093	8·22	266	3,202,517	28 8	18 8	1,097,888	10 3	[illegible]
July, 1913	1,931,327	10,015	8·51	287	2,783,917	27 8	19 5	828,477	8 8	17,000
July, 1912	2,197,933	10,063	8·30	269	3,255,198	28 9	18 10	1,092,849	10 0	66,891
August, 1913	2,217,390	9,952	8·63	293	3,092,754	27 4	17 9	1,069,747	9 8	[illegible]
August, 1912	2,170,079	10,009	8·32	270	3,248,395	29 0	19 0	1,093,158	10 2	

RECENT PROGRESS OF MODERN METALLURGICAL DEVICES.

Pachuca Tanks and Tube Mills—An Interesting Review.

AMONGST the many new developments of the cyanide process that have taken place during the past half dozen years the system of continuous agitation now employed at the East Rand Proprietary Mines and at practically all the great plants of the United States and Mexico has had many advantages claimed for it. It is simple and continuous and saves time, labour and money at no sacrifice of metallurgical efficiency. The device which has been instrumental in the attainment of a continuous agitation system has been the Brown agitator (or, as it is more usually termed, the Pachuca tank), and this is now so well established that it is not easy to realise the position in which the gold industry found itself prior to the introduction of this agitator. The Pachuca tank system was dealt with at some length in the columns of this journal a year or two ago, particularly in regard to its application to Witwatersrand mining. A pamphlet on the Pachuca tank has just been issued by the Cyanide Plant Supply Company, which brings information regarding the device up to date and which we accordingly quote from here. Practically the chief gold mines in every territory of the world (West Australia excepted) use these agitators. Amongst other well-known users are:—The Waihi, Talisman, Komata Reefs and Progress Mines, in New Zealand; the Real del Monte, Santa Gertrudis, Esperanza and El Oro Mines in Mexico; the Goldfield Consolidated, Homestake, Alaska Treadwell, and almost every well-known gold mine in the United States; the Robinson, East Rand, Ashanti Goldfields and Shamva Mines in Africa; and the gold mines of the Philippines, Korea, Sumatra and India, in Asia. The pamphlet of the Cyanide Plant Supply Company states:—

> The s[illegible] of the "Brown [illegible] it is more usu[illegible] termed, the "Pachuca tank") is [illegible] established indeed [illegible] difficult to find a description in a[illegible] journal of an up-to-d[illegible] gold or silver mining mill of which it does not form an important component part—that it now becomes a matter of no little difficulty to realise the position in which the industry found itself prior to the introduction of the agitator. If we take the position in Mexico at that date we find (see Daue's a[illegible] *Mexican Mining J*[illegible] October, 1906) that they had to [illegible] times as many [illegible], with corresponding [illegible] in circulation, and much greater zinc consumption, with continuous repair bills for the cast-iron gears, to obtain an extraction several per cent. lower than that obtained by the "Pachucas." In New Zealand the agitator proved itself indispensable for the solution of the silver-sulphide ores found in the Upper Thames district. It is on record there that it showed a tailing 10d. lower per ton than the mechanical agitator and a consumption of cyanide, taken over two months, amounting to 10 per cent. less than with mechanical agitators. In the treatment of concentrate, the saving was even more marked, doubtless because of the greater impetus necessary to the mechanical agitator when handling such rapidly settling material. The consumption of cyanide in the mechanical agitator, taken over a similar period, was 25 per cent. greater than with the "Brown" agitator. On the Rand it was discovered that the slow, turgid pump circulation method in vogue was not affording the gold sufficient opportunity to come into solution; indeed, it was found in the Ridgway demonstrations that short contact with fresh solution gained from one to three shillings' worth of gold additional extraction per ton on the material treated. It has therefore become the indispensable feature of modern Rand plants to give the slime at least a final agitation in a "Brown" agitator prior to recovery of the value-carrying solution. At the moment of writing this the *Engineering and Mining Journal* of April 12th, 1913, comes to hand, on page 767 of which Mr. A. H. Jones, referring to their work at Tonopah, states:—"As to the mechanical-stirrer type of agitator being efficient on silver sulphide ores, I will state that the type of agitator called the 'Butters' was originally installed at our Millers plant, and only a fair extraction could be obtained from it until a 6in. air lift was added, taking pulp from bottom of the vat and discharging it over the top, in addition to the mechanical stirring." We now see of what great moment to the industry these agitators have been. Indeed, a number of mining enterprises, such as the Waihi tailing scheme in New Zealand—perhaps the largest tailing treatment plant in the world—and many silver mining propositions in Mexico have sprung up as a direct result of the high extractions obtainable by the "Brown" agitator. It is as well to remember this point, because the very success of the agitator naturally brings up imitations and substitutes, many of them exceedingly plausible and attractive; but all the more does it become necessary to remember that the successful agitator which has effected these wonderfully successful results is the "Brown" agitator ("Pachuca tank"), working on its principle of the introduction of bubbles of air into a balanced column and thus causing the violent propulsion of the pulp through a central upcast by the mere lessened specific gravity of the contents of the upcast tube. Years have passed since Daue wrote the

[illegible] corroborated. The [illegible] has now thrown out its mechanical agitators and replaced [illegible] 'Brown' agitators, and the manager writes: "It is astonishing to note that with this equipment (four 'Browns') we [illegible] mill from 400 to 650 tons and simultaneously dropped [illegible] to 50 grams without other changes in the plant. The '[illegible]' (local name for Brown) is certainly a most remarkable agitator." But the triumph of the "Brown" is not confined to New Zealand, where it originated, nor to the United States and Mexico, where it is practically universally used at the best mines. It is now at work in well nigh every gold mining territory of the globe, and [illegible] Africa we are advised that four nominal 100 ton units are at the East Rand, treating 1,600 tons of slime a day for an extraction of 97 per cent. A great development in the use of the agitator is the system of continuous agitation. This sprang up on the initiative of Messrs. Grothe, Kuryla and others. Instead of each unit being filled, agitated and emptied separately, the whole system is combined into one of continuous agitation. The whole plant is thus at work all the time, instead of one or more units being always "off" for filling and emptying, and the whole of the reduction operations of crushing, classifying, tube milling, amalgamation and dissolving are continuous; and the agitated charge is delivered under such a head as to fill pressure filters without the necessity for intermediate pumping, or at such a height as to deliver direct into the pulp reservoirs above the vacuum filters, which may thus be at such elevation as to discharge with sufficient fall for the flowing away of the thick residue, all without pumping. The great success of the "Brown" has naturally provoked imitations, with results which have not infrequently caused trouble. One of the greatest assets of an invention is the amount of skilled experience from all quarters freely placed at the disposal of all licensed users. One has heard of the clogging of imitation agitators, perhaps badly designed in their proportions of height and diameter and lifting column. One has never heard of the clogging up of a duly licensed "Brown" agitator; on the contrary, the "Brown" is the only agitator which has as yet been proved able to treat densely packed high specific gravity concentrate, settled into a cement-like mass which would apparently require a charge of dynamite to move it; but the "Brown" has it all in regular agitation within twenty minutes (see *Mining and Scientific Press*, July 27th, 1912, *re* "Practice at the Homestake Mine," and same paper, October 21st, 1911, *re* "Practice at Alaska Treadwell").

Amongst other important items of mining machinery manufactured by the Cyanide Plant Supply Company are tube mills. In regard to these the company states:—

Since their original introduction to the gold mining industry, in December, 1899, by Dr. Diehl at the Hannan's Star Gold Mine, Kalgoorlie, we have had the pleasure of supplying these mills in large numbers to the great gold mining districts as well as to the most out of the way districts of the earth, such as Korea and Central America. In no case have we heard of anything but successful results accruing from the adoption of these machines. They have proved themselves the most reliable and by far the cheapest fine crushers in the market. The amount of labour required and the wear and tear is but little, and they have thus come into prominence for metal mining purposes, as being a cheaper method than stamps for crushing sands. Thus, to put it more plainly, if we relieve the stamps of the work which is the hardest for them to do, the energy and power which would otherwise be required to accomplish this difficult work can be expended in a more suitable manner; the difficult work being performed by some special apparatus which does this work more easily and cheaply than stamps. If instead of crushing to 60-mesh or 30-mesh, or even 25-mesh in a battery, one crushes only to 8, 10, 12, 15 or 20-mesh, it is found that the output of the battery may be increased by 50 per cent., or even more, and that the proportion of coarse sand existing in this output may be economically ground in tube mills. Thus, at the Glen Deep, it was found that whereas by crushing through 800-mesh an output of 4·9 tons per day was being secured, by crushing through 12-mesh an output of about 8 tons per day was secured, and crushing through 8-mesh the output was raised to nearly 11 tons per day. Now of the above output from 10 per cent. to 70 per cent., according to the size of screening used, would be re-ground, and this is where the tube mills come in. The adoption of tube mills also enables a higher extraction to be obtained by amalgamation and by cyaniding from the more finely crushed sands, as it enables a much higher standard of fineness to be adhered to. As to the cost of re-grinding, it is found that a tube mill of the size of that at the Glen Deep, or, say, 5ft. diameter by 22ft. long, will grind from under 100 to over 200 tons of sands per diem from 64 or 100 screening down to 3,600 screening (60 mesh). The variation in output is effected by increasing or diminishing the load of flints, the maximum effective charge being when the mill is loaded up to just below the centre line. The horse power taken by the Glen Deep mill was stated at under 0·3 h.p. per ton ground, or, say 60 h.p. for over 200 tons of sands ground per diem; this is a question of fineness of ultimate product, if we double it we are still below stamps which are credited with crushing about 1½ tons per day per h.p. It can thus be seen where the gain in saving of power comes in from the adoption of tube mills, and similar gains are shown in wear and tear, repair, supervision and labour. But the great advantage of the tube mill is the higher extraction resulting from the finer grinding; it would scarcely be too much to say that the tube mill has reduced African residues from 0·6 dwt. to one-third of that value. In Africa it has been proved by Mr. J. R. Williams, Dr. Diehl, and others, that by the use of tube mills the output may be doubled at a less cost and at an additional profit resulting from the increased extraction obtained by their use. Glen Deep results: 4·9 tons per stamp per diem, 800 holes to the square inch, increased to 10·86 tons per diem, 64 holes to square inch, the intermediate results being 6·9 tons per diem (200 holes), 7·8 tons per diem (150 holes), 8·04 tons per diem (100 holes). The Waihi Company, by the adoption of tube mills, increased its output by 40 per cent. and reduced the value of its residues by over 50 per cent. Denny showed that the gold recovered on plates was from finer particles only. Particles crushed coarser than 60-mesh yielded no gold on the plates, whilst particles finer than 150-mesh yielded no less than 83 per cent. of the total gold to simple amalgamation, and this on ore carrying sulphides. With the ribbed liners now in use in South Africa it is not uncommon for 400 ounces of gold to be recovered at a clean up of a tube mill from the floured or escaped amalgam trapped and accumulated by the tube mill liner. At the Gwendolen Mine, in Korea, on pyrrhotite, it was found that after installing one of our tube mills the extraction by amalgamation increased by over 50 per cent., and indeed gave so fine a recovery on these pyrrhotite ores as to make cyanidation unnecessary. The Glen Deep experiments confirmed these results. In the early experiments, an additional 3 dwt. per ton was recovered by amalgamation from the coarse concentrates after they had been put through the tube mill. In recent longer experiments, an additional 2 dwt. has been recovered per ton from the greater proportion of the amount of sand (two-thirds of the total) put through the mill. This is being obtained not only from the amalgamating plates, as shown above, but from the cyanide plant as a result of the finer crushing. In every known case the use of the tube mill has resulted in better extractions. The Glen Deep work showed an estimated increased profit of 2s. per ton resulting from the increased extractions obtained.

East Gwanda Mines, Ltd.

The well-known mining properties in the Gwanda district, Southern Rhodesia, comprising the West Nicholson and Olympus Mines, the Jessie Mine, the Valley Mine, and Eagle Vulture Mine and the Geelong Mine, together with all the buildings and milling machinery and plant, etc., thereon are now for sale by tender. Tenders will be received by W. J. Atterbury, agent for the liquidator, up to the 15th day of December, 1913. Full particulars of the claims constituting the above mines and of the machinery and of the plant situate thereon may be obtained from Harold de Vauv Brougham, Esq., Official Receiver in Companies Liquidation, at 33, Cary Street, Lincoln's Inn, London, W.C., England. The highest or any tender not necessarily accepted, and further subject to any offer obtained receiving the sanction and approval of the High Court of Southern Rhodesia.

The [illegible] at the Stavoren [illegible] property is now completed, and it is expected that the reduction plant will be in working order by the end of the year. Up to the present time the work has been somewhat restricted on account of shortage of water [illegible] understood [illegible] water is procurable now for rotary washing. As soon as the rainy season commences an abundance of water will be conserved, and this, coupled with the inauguration of the reduction plant, should mean a large and regular output of tin from this property.

Union Land Settlement Co.

On the recommendation of Mr. W. J. Palmer, after a tour through Natal, Free State and Cape Provinces, it has been decided to extend the time limit for share subscriptions to the Union Land Settlement Co. of S.A., Ltd., until the 24th October next.

The Cyanide Plant Supply Company.

We have received some supplements recently issued by this company dealing with Brown agitators and tube mills. They bring together a mass of information never before published and of great interest to the mining community. We review the publications more fully in another part of this issue.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Durban Harbour Coals.

To the Editor, *South African Mining Journal.*

Sir,—Would you kindly inform me through the medium of your esteemed journal, what has become of the Durban Harbour (Natal) Coal and Prospecting Syndicate, Ltd., registered in the Transvaal about April, 1904? I have made inquiries but cannot get any information, and as I hold several shares I should esteem it a favour if you could give me the information. Thanking you in anticipation.—Yours, etc.,

H. S.

Pilandsberg Diamonds.

To the Editor, *South African Mining Journal.*

Sir,—Could you kindly state in your next issue whether the property of the Pilandsberg Diamond Mining Co. is situated in the Rustenburg district, and whether there has been any recent report of the property to warrant the shares jumping up to 29s.? If I remember correctly your journal published a short report when this company was floated, in which it was stated that the claims were situated in the district of Rustenburg. Will you be kind enough to also inform me who the directors are and what financial house is at the back of the company?—Yours, etc.,

INVESTOR.

[These questions are dealt with in another part of this issue.—Ed.]

Comparative Safety of Electric and Other Blasting.

To the Editor, *South African Mining Journal.*

Sir,—In view of the prominence which is being given to the subject of electric blasting and the highly creditable and apparently successful efforts which are being made to introduce it into the gold mines of the Rand, the short article from the *American Mining and Engineering Journal*, which you reproduce in your journal of the 20th instant is of special interest. The article deals with the subject mainly from the safety standpoint, and after all this should be the principal consideration, but when discussing a question of this sort local conditions should be taken into account, and so far as the Rand is concerned the influence of the respective systems on the health of miners must not be lost sight of. In referring to the possibility of premature explosion the statement is made that the danger of accidental closing of the circuit cannot be entirely eliminated. This is true only in the sense that accidents may occur in almost any industrial operation, and in my opinion it should be made clear that with proper arrangements the danger of a premature explosion of this sort may be dismissed as infinitesmal. In Europe and America, where the methods of firing electrically vary considerably, the chance of an occasional accident through the accidental closing of the circuit no doubt exists, but here it should be easy to avoid such occurrences as we have the accumulated experience of the world to go on. The statement in the article in question that accidents can often be attributed to an imperfect electric fuse is possibly justifiable on the experience of a few years ago, but I can state unhesitatingly that although an occasional misfire—say 1 in 10,000—may still be attributable to an imperfect fuse, the article now on the market is very reliable. If ordinary care in h[illegible] is exercised and the precautions recommended by [illegible] are attended to, it can be safely asserted that a[illegible] on this cause [illegible] be very rare indeed. With reference to the accident rate, the figures given by Mr. Dobelstein are slightly in favour of the ordinary fuse system, but even if this should ultimately prove to be the case so far as the Rand is concerned, it will not materially affect the main argument in favour of electric blasting, viz., that it will be a very important step towards the eradication of miners' phthisis, for the reason that all blasting can and must be done after the workers have left the mine. We agree with Mr. Dobelstein when he attributes mishaps to some extent to ignorance on the part of miners, and probably this and the [illegible] of workers in general to take up anything new will be amongst the most serious obstacles in the way of the introduction of electric blasting on the Rand, but with patience and a properly organised system of training even these difficulties can be removed.—Yours, etc.,

WM. CULLEN.

Dynamite Factory, Modderfontein,
30th September, 1913.

Ventilation of the Mines of the Rand.

To the Editor, *South African Mining Journal.*

Sir,—Taking more than a passing interest in all questions appertaining to health in our mines, I was very much interested in Mr. Blenkinsop's paper (quoted by you in your last issue). Many of his arguments, however, are difficult to follow, but perhaps a little more detail will make things clear. Is it true that the line of least resistance would be the most direct route to the upcast shaft, as stated by him? Why have we a current of air in our second and third levels when the first is the most direct route? Does the writer forget the part played by resistance or of the principle of "splitting"? It is stated that the temperature of the air passing through the mine workings by means of fan ventilation will, on the Rand, be above the limit of safety. Further on we are told to have at suitable places at the surface one or more blowers of the Root's type. Perhaps I may be told that air from a Root's blower is not fan ventilation. Mr. Blenkinsop deduces his mine temperature from the *average* mean daily surface temperature which is 59·5 degrees F. To this is added 30 degrees (for an assumed average depth of mine working traversed), which gives us 89·5 degrees F. Is this a case where the law of averages can be applied? What will be the result when we have a surface temperature of, say, 100 degrees F. (not a rare thing in summer) with 30 degrees added for rock temperature. May we reasonably expect a temperature of 130 degrees F. at the working face? Someone has told us that by the law of diffusion of gases that this fresh air (Mr. Blenkinsop's system) will penetrate to all the open spaces in the mine, which will act as storage reservoirs, and that it is apparent, therefore, that the quality of the air through the mine will improve. Do I understand Mr. Blenkinsop to say that the air under his system will take up heat, moisture, dangerous gases, etc., from the working faces before it reaches the said open spaces which "act as reservoirs"? One more question: Is it a fact that "it will always be practically impossible to reach the sanitary standard of European mines"? Will Mr. Blenkinsop inform us what are the sanitary arrangements in the English metalliferous mines, and what the Coal Mines Act says about the same?—Yours, etc.,

W. LACEY.

West Rand, Oct. 1st, 1913.

ANSWERS TO CORRESPONDENTS.

Owing to pressure [illegible] answers to correspondents, mainly dealing with sharemarket matters, have had to be held over.

AUGUST YIELD, COST AND PROFIT STATISTICS.

Chamber of Mines' Analysis of the Gold Output.

The following tabulation of the operations of the mines of the Transvaal contributing to the gold production is supplementary to the details published by the Chamber of Mines in its declaration on the 10th of the month:—

THE WITWATERSRAND

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
1. Aurora West United	19,484	25	3	18	5	13,703	5,874	7	9
2. Bantjes Consolidated ...	28,247	27	10	25	1	25,446	2,543	2	6
3. Brakpan Mines	68,851	27	4	18	7	46,490	21,768	8	8
4. City Deep	66,299	38	4	26	7	45,020	19,766	11	8
5. City and Suburban ...	44,057	36	9	22	6	26,913	16,649	13	11
6. Cons. Langlaagte	58,003	25	0	17	2	37,787	20,216	9	2
7. Cons. Main Reef ...	31,395	29	11	20	11	22,004	9,006	8	7
8. Crown Mines	279,339	28	11	15	5	148,522	128,693	13	4
9. Durban Roodepoort ..	15,067	21	1	15	5	11,003	4,061	5	8
10. Durban Rood. Deep ...	34,190	27	9	24	8	29,889	3,926	3	5
11. East Rand Proprietary.	231,378	30	0	19	6	147,398	80,488	10	8
12. Ferreira Deep	108,151	39	11	19	7	52,901	54,029	20	0
13. Geduld Proprietary ...	22,887	31	0	27	5	20,264	2,570	3	6
14. Geldenhuis Deep	72,645	28	11	24	10	62,238	9,860	3	11
15. Ginsberg	21,035	27	9	19	9	14,688	6,346	8	6
16. Glencairn Main Reef ...	15,627	14	7	12	4	12,776	2,853	2	9
17. Jupiter	34,302	22	4	16	5	25,554	8 848	5	8
18. Knight Central	25,074	22	10	21	4	23,388	1,367	1	3
19. Knights Deep	69,395	12	10	10	4	54,464	11,855	2	3
20. Langlaagte Estate ...	49,622	17	10	17	3	43,377	10,106	4	0
21. Luipaardsvlei Estate ...	18,401	20	10	17	8	15,437	2,757	3	2
22. Main Reef West	29,590	30	11	22	11	21,947	7,340	7	8
23. May Consolidated	12,599	15	11	11	8	9,218	3,351	4	3
24. Meyer and Charlton ...	34,470	46	1	17	9	13,256	21,114	28	4
25. Modderfontein B. ...	68,049	40	6	16	1	27,053	40,476	24	1
26. New Goch	26,786	19	0	15	4	21,586	5,149	3	8
27. New Heriot	23,150	35	8	21	1	13,722	9,228	14	7
28. New Kleinfontein ...	74,157	28	1	18	7	49,057	24,238	9	2
29. New Modderfontein ...	83,060	42	1	18	4	36,243	46 252	23	5
30. New Primrose	34,870	27	4	12	11	16,231	18,638	14	10
31. New Rietfontein	16,171	19	4	18	6	15,437	733	0	11
32. New Unified	15,581	24	3	16	9	10,533	5,047	8	0
33. Nourse Mines	73,991	30	8	22		53,087	20,467	8	6
34. Princess Estate	28,400	25	3	24	1	27,085	1,243	1	1
35. Randfontein Central ...	270,610	25	4	17	4	183,421	84,043	7	11
36. Robinson	103,955	37	1	13	7	37,768	64,845	23	3
37. Robinson Deep	78 897	28	6	16	4	45,083	31,663	11	5
38. Roodepoort United ...	22,933	19	7	17	7	20,595	2,350	2	0
39. Rose Deep	77,955	25	6	16	5	50,459	27,496	9	0
40. Simmer and Jack	73,724	22	4	12	1	39,798	32,513	9	10
41. Simmer Deep	45,676	16	4	15	4	42,868	3,324	1	2
42. Spes Bona Tribute† ...	5,543	19	4			-	—	—	
43. Van Ryn	50,344	25	10	14	3	27,840	22,592	11	7
44. Van Ryn Deep	57,514	25	8	20	6	45,975	11,538	5	2
45. Village Deep	58,202	28	6	21	7	44,049	13,789	6	9
46. Village Main Reef ..	66,944	36	4	18	9	34,102	31,490	17	4
47. Vogelstruis Estate	14,143	20	2	18	10	12,625	1,549	2	4
48. West Rand Central ...	3,878	36	8	30	5	3,219	662	6	3
49. West Rand Cons.... ...	38,259	28	6	22	2	28,877	9,295	7	1
50. Witwatersrand . ..	44,780	24	5	13	7	24,901	19,879	10	10
51. Wit. Deep	67,157	29	5	16	5	37,395	28,945	12	8
52. Wolhuter	41,445	27	10	18	0	26,832	14,111	7	6
Miscellaneous producers	6 218	—				—	—	—	
Witwatersrand totals ...	2,963,551	27	1	17	7	1899[illegible]24	1026851	9	6
†Private.				51 cos.		51 cos.	51 cos.	51 cos.	

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by-products.

OUTSIDE DISTRICTS.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
HEIDELBERG—									
1. Nigel	20.202	30	2	24	7	15,965	4,009	6	2
2. Sub Nigel	7,582	29	5	27	7	7,110	999	3	11
BARBERTON—									
3. Barrett	803	6	2	—		—	—	—	
4. Sheba	13,975	42	7	29	3	9,597	4,377	13	4
5. Sheba-Rosetta	692	—		—		—	—	—	
6. Worcester	5,594	18	4	12	4	3,756	1,808	5	11
KLERKSDORP—									
7. Quest	2,995	14	5	13	8	2,835	161	0	9
LYDENBURG—									
8. Ceylon Lydenburg ...	1,202	37	6	22	4	716	462	14	5
9. Glynn's Lydenburg ...	8,300	43	1	18	8	3,603	4,691	24	4
10. Transvaal G.M. Estates	41,730	66	0	23	2	14,509	26.389	42	1
Miscellaneous producers	26,098	-		-		—	—	—	
Total (outside districts)	129,173	37	2	22	4	42.896	58,091	16	6
				8 cos		8 cos.	8 cos.	8 cos.	
Grand totals	3092754	27	4	17	9	1069747	1957615	9	8
				59 cos.		59 cos.	59 cos.	59 cos.	

A comparison of value recovered per ton milled, working costs and profits per ton with July shows that the value recovered on the Witwatersrand for August was 27s. 1d., or 5d. per ton less than for July. Working costs in August were 17s. 7d.; in July 19s. 4d.; in June 17s. 8d.; in May 17s. 7d.; in April 17s. 11d.; in March 17s. 8d.; in February 18s. 3d.; and for both January and December 18s.

For January the tonnage milled was 2,296,948 tons; for February, 2,100,137 tons; for March, 2,321,254 tons; for April, 2,301,099 tons; for May, 2,366,726 tons; for June, 2,177,354 tons; for July, 1,873,980 tons; and now for August, 2,162,807 tons. In the outside districts the total tonnage milled was 54,583, making a total for the Transvaal of 2,217,390 tons.

The total dividends declared for 1913 to date are: Witwatersrand, £4,271,388; outside, £215,592; total, £4,486,980.

The total dividends for the two years were: 1911, £8,066,437; 1912, £8,291,477.

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Rhodesian Section.

LATEST MINING NEWS.

A Record Gold Output—Remarkable Small Mine Return—Anglo-French Co.—Hanover Syndicate—Bushtick Mines—Zambesia Mining—Shashi and Macloutsie Co.—Globe and Phoenix—The Old Nic.

THE total value of Southern Rhodesia's mineral output for the month of August has been officially declared at £286,945, an increase of £16,133 as compared with the month of July. The figures for the two months read as follows:

	July.	August
Gold	£249,302	£250,576
Silver	1,280	1,243
Lead	167	446
Chrome Iron ..	12,163	26,143
Coal (sales)	7,171	6,638
Asbestos		1,427
Diamonds	429	472
Total	£270,812	£286,945

This is the highest total for any one month so far declared, being an advance of £10,339 on the previous "best" set up in July, 1912. This result, as will be readily seen, is principally due to the greatly enlarged output of chrome iron ore, and to the re-appearance in the list of an asbestos output. The gold total shows an advance of 287 ozs., as compared with July, and is also a "record," while it is 2,730 ozs. ahead of the amount declared for the corresponding month of last year. The details of the gold yield are of more than usual interest by reason of the enhanced return from the Bulawayo district, where the small workers continue to add appreciably every month to the total. Amongst these is a phenomenal return of 253 ozs. from only two tons crushed, made by R. McConville, an old Gwanda hand, from a property in the neighbourhood of the old Jessie mine, which the owner has called the New Jess.

* * * *

At a meeting in mail week of the Anglo-French Matabeleland Company Mr. F. A. Robinson said that a beginning had been made with the sale of their land. About 53,000 acres of the West Gwelo block had been sold at an average price of about 9s. 2d. per acre—the actual prices obtained were from 7s. 6d. to 12s. 6d. per acre, according to situation and character—and higher prices were expected to be obtained for the remainder of the block. The land had been disposed of, not to land speculators to sell again, but to substantial *bona fide* farmers—men with long experience in farming in Cape Colony, who had migrated from there with their families believing they would find better opportunities in Rhodesia. The company's ranching scheme on the Belingwe block was reported to be progressing satisfactorily. During the year their income from mining claims, including tribute, option money, etc., was over £1,700. He remarked in conclusion, that although the dividend stage had not yet been reached, the company was in a sounder position than it had been for several years.

* * * *

On the Thorn claims (Filabusi), the property of the Hanover Gold Mining Syndicate, the old incline shaft has been cleaned out and sinking continued, the present depth being 90 feet. The reef here shows from 18 to 24 inches wide and carries well. A drive west has been started. A drive east, at 80 feet, is in 8 feet on 24 inches of nice looking reef. On the surface three old trenches are being cleaned out and one has just exposed the reef 100 feet to the [illegible] which pans well. A cyanide plant is being added to the reduction works on this property.

* * * *

The report on operations at the Bushtick mine, for the quarter ended the 31st August last, states that 19,099 tons were milled during the period for a recovery of 662·18 ozs.; and that the sands and slimes treated—19,093 tons—gave a yield of 3,035·01 ozs. The total yield was therefore 3,697·19 ozs., valued at £15,562 2s. It is of interest to note that the value of the yield was a progressive one during the quarter, the actual figures reading: June, £4,952; July, £5,204; August, £5,405. The development footage accomplished in the three months amounted to 797 ft., all in good value.

* * * *

The first ordinary general meeting of the Zambesia Mining Development, Ltd., was adjourned in mail week to 4th prox., owing to the absence of a quorum. The report for 1912 states that the results of the year proved to be of a negative character. The company's operations have been directed towards taking over the mining department of the Zambesia Company, whose administration it has assumed; appointing at Tete a representative of the company, with instructions to examine the mining resources of the district, and sending a prospecting mission to the hydrographic basin of the Luena.

* * * *

The annual general meeting of the Shashi and Macloutsie Exploration and Mining Company, Ltd., was held on the 27th ulto., at the offices, 2, London Wall Buildings, E.C., Mr. Townshend presiding. The report to December 31 last stated that in connection with the negotiations between the British South Africa Company and His Majesty's Government in connection with the promulgation of a mining law for the Bechuanaland Protectorate, which was sanctioned in the company's concession, the directors were informed that the Secretary of State for the Colonies had prepared a revised draft, which, however, in the opinion of the B.S.A. Company, was not satisfactory in many respects and would prejudicially affect the value of their concession. Negotiations were therefore still proceeding. In the meantime, no active steps as regarded prospecting were possible, but the amounts which were necessary for the upkeep of the company's assets had been provided by the British South Africa Company. The report was adopted.

* * * *

Regarding the Globe and Phoenix it is reported from Edinburgh: Negotiations have been instituted for bringing the various groups of Scottish shareholders of the Globe and Phoenix Gold Mining Company into line with the view of supporting the market. It is alleged that the shares are

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being offered by certain parties with the view of depressing the price, this having been rendered easy by the lack of anything in the nature of shop support. As is well known, the great bulk of the shares are now held in Scotland, and in the past there has been considerable divergence of opinion between the different groups; but, as the result of recent developments, combination has been rendered easier. Official denial has been obtained from the office of the company of the rumours that the new shaft on the John Bull claim was to be abandoned and the capital increased; on the contrary, the shaft is stated to be making rapid progress and will connect with the existing workings at the 19th level about March. The committee presently visiting the mine leaves for Home on Saturday and it is understood the report will be submitted immediately on its return.

* * * *

The Charterland and General Exploration and Finance Company publishes the following results for August:—"Old Nic mine—Mill ran 713 hours, crushed 2,026 tons, yielding gold of estimated value of £3,238. In addition there were treated by cyanide 998 tons, yielding gold of estimated value of £1,004. The estimated profit for the month was £1,906. Total footage, 201 ft."

The secretary of the Bwana M'Kubwa Copper Company writes:—"Referring to the circular issued on the 28th July last, I am instructed to enclose for your information a copy of the full report submitted by Messrs. Hooper Speak & Co., consulting engineers, dated 27th ultimo. The report deals with many important points bearing upon the mine itself and upon present and future operations and possibilities, which will require very careful consideration before definite conclusions can be arrived at. The board, therefore, deem it desirable to circulate the report at once, practically without comment, to obviate the delay which otherwise would be involved. As Dr. Thomas Huntington, metallurgical engineer, a member of the board, is proceeding to South Africa at once, and will visit the mine, the board have decided to await his advices before initiating any new work. Meantime the mining and concentration operations will be continued as hitherto."

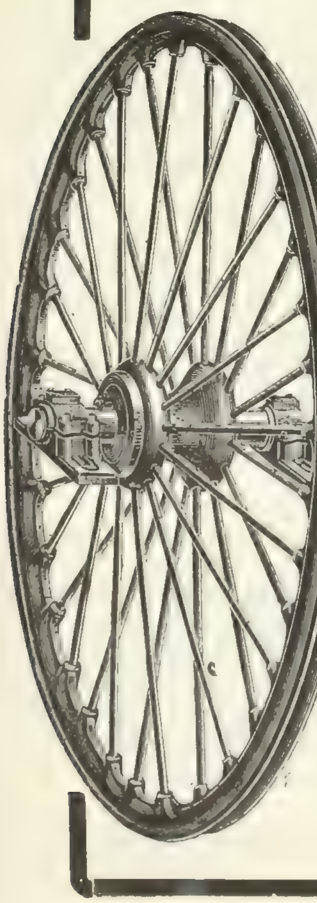
* * * *

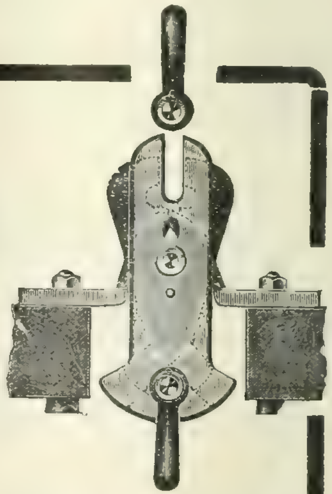
The Benguella Railway Company has been granted a concession of about 617,000 acres of land in Angola, in blocks of about 12,350 acres each. Tanganyika Concessions, Ltd., holds a 90 per cent. interest in the Benguella Railway Co.

The annual meeting of the Afrikander Proprietary Gold Mines, Ltd., was held on Wednesday. Mr. William Dalrymple presided. The chairman said: The report of the directors and the balance sheet for the year ended the 30th of June last are before you for your consideration. The accounts show that at the end of the year the company was indebted to its bankers to the extent of £33,637. The net general expenses during the year amounted to £4,410, of which claim licences and mynpacht dues represented £1,363, and interest on the overdraft £2,028. No opportunity for adjusting the finances of the company, and providing the necessary additional working capital, has presented itself during the year, which has been one of marked depression in mining circles. The property remains in the hands of a caretaker, and working expenses have been reduced to the lowest possible figure. I now beg formally to move the adoption of the report and accounts before you.

Monday the 22nd ulto., witnessed the opening of the mill at Leeuwpoort, and a very satisfactory trial run was made.

Anglo-French (Transvaal) Nav. Coal Estates have declared Dividend No. 6 (on 120,000 cumulative preference shares) of 5 per cent., or 1s. per share.





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RHODESIA'S MINERAL OUTPUT FOR AUGUST.

Record Gold Production—The August Details.

We have received for publication from the office of the Rhodesia Chamber of Mines (incorporated) the following detailed statement of the mineral output for the month of August, 1913, with comparisons and values:—

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
BULAWAYO DISTRICT—				
Abercorn (W. J. Lane)	2	240	140·35	589
Agincourt (H. L. Maidwell)	5 1P	298	210·05	882
Alice and Atlas (Estate R. Barkley, deceased)	10	505	196·81	827
Do. (tailings)	—	640	46·09	193
April Rain (R. Thomas)	(5)	93	17·19	72
Bangah (Arbery and Hicks)	5	420	105·82	444
Do. tailings)		298	14·26	60
Belmont (A. D. Hall)	5	200	55·64	234
Do. (tailings)		200	10·41	44
Bembesi 1 (R. Nankervis)....	5	200	64·78	272
Big Ben (W. E. Hunt)	4	228	107·39	451
Do. (tailings)	—	154	67·22	282
Blanket (Forbes R. Synd., Ltd.)	15	237	55·68	234
Bobs (Bobs Reef Syndicate)	5	770	104·06	437
Burton (S. H. Burns) tailings	--	600	30·79	129
Bushtick Mines, Ltd.	24 3T	6,267	198·96	836
Do. (tailings)	—	3,190	793·11	3,331
Do. (slimes)		3,033	292·16	1,227
"C" (D. and C. Syndicate)	10 1C	2,137	124·60	523
Do. (tailings)	—	1,710	162·17	681
Do. (slimes)	—	427	67·27	283
Carry (S. and G. Syndicate)	1 H	130	166·22	698
Champion 1 S.E. and H. (R. Asserman)	5	589	79·55	334
Do. (tailings)		323	59·67	251
Clean Up (H. W. Bearcroft)	5	410	163·71	680
Colleen Bawn (Colleen Bawn Syndicate, Ltd.)	5 1P	631	33·26	140
Do. (tailings)	—	350	27·86	117
Do. (slimes)	—	580	72·02	302
Cottage (Cranleigh Syndicate) ...	2	160	48·10	202
Do. (tailings)	-	320	24·42	103
Dame Sceptre (T. J. Montrose)	2	104	48·11	202
Eagle A. (Macdonald & Co.)	5	650	295·61	1,242
Do. (tailings)	—	256	48·41	203
Elumba A. and A1 S.W. (Cooper and Bosomworth)	5	550	145·93	613
Do. (tailings)	—	500	88·65	372
Farvic (H. S. Henderson)	5	509	167·84	705
Do. (tailings)	—	315	24·02	101
Flora E. E. Beecroft)	5	145	101·08	425
Fred (Transvaal and Rhod. Est., Ltd.)	5	563	592·71	2,489
Do. (tailings)	—	910	148·41	623
Godwin B. (Barrett and Stacey)	5	120	47·87	201
Golden Butterfly (Wheeler, Davis and Rintoul)	5	544	98·12	412
Golden Thread (T. J. Montrose)	(5)	220	52·08	219
Good Hope (O. Norman) (tailings)	—	300	10·50	44
Great Bear (A. D. Gunn) (tlgs.)		40	3·20	13
Imani (E. Rochfort)	2	199	50·38	212
I X L (G. Jose) (tailings)	—	650	24·78	104
Jumpers (J. P. McCay)	5	220	143·54	603
Kameel (New Rhod. M., Ltd.) ..	5	600	222·49	934
L (J. A. Warwick)	5	350	145·42	611
Li Hang Chang (G. Leach)	3	100	17·95	75
Limes (D. Vincent)	5	200	14·50	61
Little Beauty (T. A. Matthews)	5	51	62·76	264
Lone Hand (Armstrong, Furber and Alexander)	5	470	129·82	545
Do. (tailings)		360	86·34	363
Lonely Reef G.M. Co., Ltd.	20 3T	5,841	1,557·35	6,541
Do. (slimes)	—	5,841	3 509·15	14,738
Do. (other sources)			40·69	168
Manx Cat (Manx Syndicate)	4	100	78·30	329
Matabele 3 (R. M. Nairn)	10	1,320	619·64	2,602
Do. (tailings)		720	131·82	554
Matabele Queen's Co., Ltd.	10	1,850	280·32	1,177
Do. (tailings)	—	1,850	515·88	2,167
Do. (slimes)	—	510	54·57	229
Minnie's Luck A (C. M. Reid) ...	5	180	32·96	138
Mtakati (H. A. Tompkins)	2	31	23·71	100
Namaqua (T. W. Angus)	2	300	24·74	104
Do. (tailings)		200	28·03	118
Nelly (F. D. Roscoe)	2H	859	574·49	2,413
Do. (tailings)	—	390	81·88	344
New Eclipse (J. R. Stewart)	5	830	200·45	842
Do. (tailings)	-	280	21·04	88
New Insimbi (P. G. Challen) ...	5	180	40·40	170
New Jess 1 (R. McConville)	2	2	253·77	1,066
Old Nic (Chart. and Gen. E. and F. Co., Ltd.)	15 4P	2,026	768·18	3,225
Do. (tailings)	--	998	240·11	1,008
Pannings (C. J. Godwin)	--	—	9·92	42
Planet (Huntley and Triggs) ...	5	736	143·36	602
Princess (C. A. Abbott)	2	148	47·85	201
Rainbow (Nairn and Crewe)	5	237	85·68	363
Do. (tailings)	--	225	3·37	14
Riversdale (Bruhns and Schwarz)	5	240	63·76	268
Riverside (R. Martindale)	2	100	24·08	101
Do. (tailings)	—	160	27·04	114
Roan (J. Robinson)	2	360	68·00	286
Roman (E. V. Campbell)	(5)	130	23·06	97
Rous 1 (A. D. Hadingham)	2	161	141·77	595
Susanna Mines, Ltd.	8	891	351·88	1,478
Do. (tailings)	—	608	90·93	382
Do. (slimes)		351	57·98	243
Thorn (Macdonald and Bonshor)	5	513	181·31	761
Tuff Nut (King's Syndicate)	5	540	189·03	794
Do. (tailings)	—	325	54·75	230
Do. (slimes)		420		
Ubigubi 1 N.E. (Berwitz and Mannheim)	2	204	56·06	235
Umvoti (Henderson and Toshack)	2	85	21·93	92
Up-to-date (Cumings and Berry), clean up		—	53·45	224
Do. (tailings)		-	55·20	232
Winifred (Rhod. M.M. Exchange)	1 I.R.	175	162·80	684
Xmas (M. Westerberg)	2	16	9·79	41
Bulawayo district total			17,310·67	72,694
GWELO DISTRICT—				
Ardpatrick (C. Maleham)	5	366	198·40	833
Alderman (A. Williams and H. Woodger)	5	250	92·77	390
Allanah (A. and B. Syndicate)...	5	160	48·59	204
Beacon Hill (R. Aserman) (tlgs.)	—	200	32·37	136
Bedad (A. and B. Syndicate) ...	(5)	110	39·58	166
Bee (Scott, Hodgson and Nalty)	2	206	63·67	267
Broad Arrow (F. Ewing)	10	380	42·67	179
Do. (tailings)	—	175	2·97	13
Churchill (J. Jones)....................	6	80	65·46	275
Cinderella (P. Burt)	1E	395	54·82	230
Collingwood (Pini and Wearing)	Ball mill	3	95·26	400
Csardas (Wolfshall Syndicate) ...	10	521	491·39	2,064
Do. (tailings)	—	397	76·98	323
Do. (slimes)	—	124	11·47	48
Gaika G.M. Co., Ltd.	5 1C	3,020	1,134·34	4,764
Do. (tailings)	—	1,293	124·28	522
Do. (slimes)	—	1,395	108·35	455
Do. (O.S.)	—	—	65·50	275
Gartley (A. J. Grant)	2	62	41·10	173
Do. (tailings)	—	50	9·01	38
Glenrosa No. 1 (H. G. McIntosh)	2	188	124·78	524
Do. (tailings)	—	135	40·78	171
Globe and Phoenix G.M. Co., Ld	40 10P	6,702	8,778·23	36,869
Do. (concentrates)		294	916·83	3,851
Do. (tailings, partial clean-up)	—	--	302·86	1.272
Do. (slimes)		2,490	557·73	2,342
Gothic (Mashonaland Agency, Ltd.)—July	15 2P	400	56·97	239
Do. August	15 2P	77	318·20	1,337
Gretna Green (M. L. Price	5	68	56·91	239
Do. (tailings)	-	120	14·55	61
Invulnerable (A. E. West)	5	82	13·54	57
Kings (P. S. Warden) (tailings)	—	565	154·91	651
Mash (B. Fran)	1D	21	25·75	[illegible]
Moonie River (Yellow Jacket Sd)	5	294	95·90	403
Moss (James and Morrisby)	2	371	215·97	907
Do. (tailings)		430	37·13	156
New Dunraven G.M., Ltd.	5	950	98·67	414
Do. (tailings)		720	48·96	206
New Moss (Robinson & Bennett)	2	292	89·34	[illegible]
North Bonsor (Cornish Syndicate)	15	2.375	274·83	1,154
Do. (tailings) ...		56	62·07	[illegible]
Palm (A. Malcolm)	5	285	54·40	228
Paradox (Bolt and Franks)	5	200	85·92	361
Pompeii (Pharos Syndicate)	2	128	39·21	165
Do. (tailings)	—	410	19·55	82
Red Hill Dev. Synd., Ltd.	1C	2.621	60·06	252
Do. (tailings)		1.018	74·48	313
Selukwe Columbia G.M., Ltd	1C 3P	3.200	901·10	3.785
Do. (concentrates)		195	205·58	863

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Selukwe (tailings)	—	2.139	311·56	1,309
Do. (slimes)	—	935	125·27	526
South Bonsor (Ideal Syndicate)	10	623	69·79	293
Do. (tailings)	—	480	31·68	133
Tebekwe (A. N. Tyrrell)	15	1,920	189·56	796
Tebekwe 1 (A. N. Tyrrell)	(5)	53	22·04	93
Veracity (J. Fischer) (slimes)	—	400	51·50	216
Wanderer (Selukwe) G M., Ltd.	4GR	12,462	1,193·16	5.011
Gwelo district total			18,518·77	77,778
Matabeleland total			35,829·44 ozs.	
Value			£150,472	

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT—				
Acorn Gold Mines, Ltd.	5	479	165·76	696
Do. (tailings)	—	360	57·81	243
Agnes (P. S. Triggs)	5	520	212·05	891
Do. (tailings)	–	364	18·46	73
Alabama (Rix and Reynolds)	5	210	98·58	414
Amaroso South (C. H. Weildon)	5	210	48·85	205
Battlefields (Rhodesia), Ltd. (Minaar and McArthur)	2C	1,716	306·51	1,287
Do. (tailings)	—	1,430	120·97	508
Do. (slimes)	—	286		
Do. (other sources)	—	—	21·67	92
Blue Rock (Blue Rock Syndicate)	2	280	89·65	377
Do. (tailings)	-	225	35·19	145
Brilliant (Mabel's Luck Synd.)	7 1P	1,121	319·31	1,341
Do. (tailings)	—	448	131·22	551
Buckwal 1 (E. H. Walsh)	(5)	245	79·14	332
Concession and W. Extension (C. E. Simpson)	5 1C 2P	2,328	414·76	1,742
Do. (tailings)	—	1,740	104·65	494
Crown No. 11 (Crown Syndicate)	2	130	23·37	98
Do. (tailings)	—	110	35·07	147
Dalny (Macdonald and Sale)	5	918	73·84	310
Do. (tailings)	—	275	155·23	652
Do. (slimes)	—	540		
Dalny 1W. (Shagari Mines, Ltd.)	5	400	71·59	301
Do. (tailings)	—	240	49·57	208
Dowry (P. A. Enke)	1 PN	150	21·14	89
Dreadnought (W. E. Masters)	1 C	337	54·06	227
Duke No. 1 (Jose and Munro), clean-up	—	–	14·37	60
Early Bird (Sun Syd.), tailings	—	140	12·42	52
Eiffel Blue and E. Extension (Willoughby's)	10	1,596	504·34	2,118
Do. (tailings)	—	900	85·97	361
Enney Extension (Ellsmoor and Goodyer)	5	300	59·80	251
First Venture A (J. P. Carroll)	2	60	7·85	33
Do. (tailings)	—	73	53·85	226
George (Heroine G.M. Co., Ltd.)	10	1,755	158·30	665
Giant Mines of Rhodesia, Ltd.	30 2T	11,039	2,454·62	10,454
Glasgow Mines, Ltd.	5	480	102·45	431
Do. (tailings)	—	240	57·35	241
Glencairn No. 3 (Glenrosa Synd.)	4	256	182·65	767
Do. (tailings)	—	200	29·39	124
Globe (E. J. Davies), clean up	—	—	4·49	19
Golden Valley (J. Mack)	10	475	262·55	1,103
Do. (tailings)	—	280	82·41	346
Goodenuf (Hartley Pioneer Syd.)	5	36	15·36	64
Guelph (J. and M. Davidson)	(5)	130	76·70	322
Inez (Harill and Smith)	10	600	149·32	627
Do. (tailings)	—	410	87·61	368
Juno (H. R. Nicholl)	5	175	32·19	135
Kinfauns and 1 (J. Mack)	5	424	77·76	327
Do. (tailings)	—	272	19·31	135
Midwinter (Midwinter Syndicate)	2	156	35·76	150
Oleander G.M. Co., Ltd.	3	302	58·03	244
Do. (tailings)	—	124	52·43	220
Do. (slimes)	—	178		
Owl (A. Rolfe)	10	1,323	519·04	2,180
Do. (tailings)	—	925	144·30	606
Pickstone Gold Mines, Ltd.	10 1C	2,003	694·27	2,916
Do. (tailings)	—	2,500	247·98	1,042
Pomposo (J. Knott)	5	300	128·40	539
Rover (S. H. Coker)	2	60	45·66	192
Seigneury (C.M. & I. Cor., Ltd.)	5	439	222·91	936
Do. (tailings)	—	300	26·88	113
Shepherds (Phœnician (Rhodesia) Co., Ltd.)	5 1T	1,128	340·68	1,431
Do. (tailings)	—	1,101	111·53	468
Sid (Sebakwe and District Mines, Ltd.)	5	582	205·93	865
Do. (tailings)	—	330	49·31	207
St. John del Rey (C. G. Downie)	5	694	50·38	212
Tea (C.M. & I. Cor., Ltd.)	5	864	193·73	814
Do. (tailings)		191	35·98	151
Thistle-Etna G.M., Ltd.	1C	3,203	929·64	3,905
Thistle Etna (tailings)	—	2,546	277·90	1,167
Do. (slimes)	—	644	65·43	275
Try Me 2 (R. R. Aitkin)	5	400	126·82	533
Do. (tailings)		460	53·51	225
Turkois & 1 N.E. (Gold Fields R. D. Co., Ltd.)	5	190	32·57	137
Do. (tailings)	-	114	46·34	195
Warthog (Davidson and Kelsall)	5	72	19·71	83
Washington (I. J. Minaar)	5	412	202·95	853
Do. (tailings)		350	32·18	135
Do. (slimes)	—	200	5·02	21
Hartley district total			12,204·92	51,416
LOMAGUNDI DISTRICT—				
Alluvial (G. Blacklaws)			13·40	56
Do. (R. G. Harding)	—	—	72·67	305
Do. (E. A. Warry)	—	—	32·94	138
Do. (E. W. Young)	—	-	17·34	73
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	7,793	2,152·32	9,128
Do. (tailings)	—	8,311	831·92	3,528
Linnett (A. R. Morkel)	2	706	179·05	752
Lone Hill (F. B. Platt)	2	120	23·08	97
Pannings (F. B. Platt)			6·53	27
Ventura (Stone and Standen)	2	308	52·51	221
Lomagundi district total			3,381·76	14,325
MAZOE DISTRICT.—				
Botha H. (B. G. Byerley)	5	1,185	92·88	390
Honest (G. Brown)	3	98	60·65	255
Hope (Hope Tailings S.), tailings	—	1.000	88·82	373
Jumbo G.M. Co., Ltd.	30	3,300	517·76	2,200
Do. (tailings)	—	2,120	413·31	1,757
Do. (slimes)	—	1,180	154·25	656
Kimberley (Mash.) G.M. Co., Ld.	6 2T	3,250	619·63	2,635
Do. (tailings)	—	1,000	111·90	472
Do. (slimes)	—	2,250	115·10	486
Micky (Micky Syndicate)	2	289	151·54	636
Mitre 8 (Bishop's Syndicate)	1D	17	20·94	88
New Found 1 N. (D. H. Curry)	5	406	128·39	539
Occola G.M. Co., Ltd.	5	627	275·18	1,156
Do. (tailings)	—	410	62·55	263
Umkulu D.B. 1 W. (Llahsram Syndicate)	2	254	35·77	150
Xmas 1 N.W. (Pearce Laland Syndicate)	2	200	44·52	187
Mazoe district total			2,893·19	12,243
SALISBURY DISTRICT.—				
Arab (H. G. Bateman)	1 D	10	18·57	78
Briar (J. Seton Rogers), tailings	-	1,160	46·51	195
Hopefield (Hopefield Syndicate)	2	100	32·13	135
Do. (tailings)	- -	200	30·17	127
Inyague 3 (P. L. Peters)	2	56	44·62	187
Joker (W. C. Harrison)	2	255	251·43	1,056
Louise Grand H. S. Plant)	1H	692	64·44	271
Do. (tailings)	—	692	65·91	277
Mont d'Or (Claxton and Russell)	2	184	84·85	356
New Full Back G.M. Synd., Ltd.	2	72	22·38	94
Salisbury district total			661·01	2,776
UMTALI DISTRICT.—				
Champion (J. Buchanan)	5	654	74·40	312
Do. (tailings)	—	540	141·13	593
Do. (slimes)	—	120		
Elgin (Umtali Waterfall Synd.)	(10)	508	170·18	715
Do. (tailings)	—	124	26·38	111
Do. (slimes)	—	100		
Kent (E. Evans)	5	305	95·57	402
Do. (tailings)	·	280	42·95	180
King's Daughter D.B. (Umtali Waterfall Syndicate)	10	318	42·16	177
Do. (tailings)	—	124	18·15	76
Do. (slimes)	—	1,218	136·66	574
Liverpool 38 (R. G. Snodgrass)	5	635	94·84	398
Do. (tailings)	—	280	24·41	103
Pilgrim 2 E (J. Meikle)	5	614	154·21	648
Quagga (Quagga Syndicate)	5	600	103·72	436
Rezende Mines, Ltd.	95	16.369	1,896·18	8,045
Do. (concentrates)	—	165	579·15	2,423
Do. (tailings)	—	2,325	347·17	1.473
Two Sisters (F. E. Markham)	2	60	19·33	81
Umtali D (Umtali Waterfall Syndicate), tailings	-	77	44·50	187
Do. (slimes)		115		
Umtali district total			4,011·19	16,934
VICTORIA DISTRICT.—				
Grand Slam (Ledingham & Hart)	5	260	145·22	610
Texas (G. Scott)	5	780	286·51	1.203
Do. (tailings)		700	112·18	597
Victoria district total			543·91	2,410
Mashonaland total			23,725·98 ozs.	
Value			£100,104.	
Grand total gold output			59,555·42 ozs.	
Value			£250,576.	

OTHER MINERALS.

Silver, ozs.	11,776,58	£1,242
Lead, tons	24·65	446
Chrome iron, tons	11,711·90	26,143
Asbestos, tons	16·95	1,427
Diamonds, carats	[illegible] 75	472
Coal, tons	[illegible]	6,638
Total value of mineral outputs		£286,945

COMPARISONS IN GOLD OUTPUT.

	Ozs.	£
August, 1913	59,555·42	250,576
July, 1913	59,267·71	249,302
Increase	287·71	1,274
August, 1913	59,555·42	250,576
August, 1912	56,824·86	239,077
Increase	2,730·56	11,499

The only previous monthly output higher than August is March of this year, but this included 4,764·04 ozs. reserve gold declared, valued at £20,009. Previously to this, last month's figures constituted a record.

	Ozs.	£
March, 1913	61.274 36	257,797
August, 1913	59,555·42	250,576
Difference	1.718·94	7,221

GRAND TOTAL OUTPUT.

	Gold. ozs.	Silver ozs.	Chrome Iron. tons.	Coal. tons.
Output to Dec. 31, 1906	1,989,775·64			
Do. 1907	612,052·35	445,679·23	11.663·80	422,615
Do. 1908	606,961·38	283,424·00	13,357·73	164,114
Do. 1909	623,388·07	262,132·78	25,620·47	170.893
Do. 1910	609,955·82	217,632·71	44,002·00	180.068
Do. 1911	628.521·37	187,641·00	52,863·31	212,529
Do. 1912	642.807·07	176,532·01	69.260·60	216,140
Do. 1913 (8 months)	444,300·15	97,286·72	41,834·11	158,384
Total to date	6,167,761·85	1,670,528·45	258,102·02	1,524,743

Value to date £24,041,443

Lead: Total to date, 6,801·73 tons. Copper: Total to date, 359·01 tons. Tungsten ores: Total to date, 129·10 tons. Antimony: Total to date, 13·75 tons. Asbestos: Total to date, 1,198·45 tons. Diamonds: Total to date, 9,334·12 carats. Other precious stones: Total to date, 90,069·50 carats.

C, Chilian mill; T, tube mill; G.R., Gates roll; H, Huntington mill; P, grinding pan; Pn, pneumatic mill; D, dolly.

THE MONTHLY TOTALS.

The following table shows the value of the monthly and annual gold outputs of Southern Rhodesia since January, 1911, together with the value of the annual output of other minerals:—

Month.	1911. £	1912. £	1913. £
January	207,903	214,918	220,776
February	203,056	209,744	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211,413	234,408	243,452
June	245,347	226,867	240,303
July	237,517	240,514	249,302
August	243,712	239,077	250,576
September	225,777	230,573	
October	218,862	230,072	
November	214,040	225,957	
December	217,026	218,661	
Gold	2,641,897	2,707,369	1.912,048
Minerals	242,863	257,230	167,096
Total value	2,890,759	2,964,599	2,079,144

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Red Cross Society.

At the monthly meeting of the Provisional Executive Committee of the South African Red Cross Society, Professor J. A. Wilkinson presided over a good attendance. It was reported that the Society's special text-book, written by Dr. L. G. Irvine, was now practically completed, and authorisation was given for its publication. The sub-committee dealing with the regulations for ambulance corps presented an interim report, which was approved. Owing to illness and absence from town of several members, the regulations had not been completed, but it was hoped they would be ready for publication shortly. In this connection it was reported that the Crown Mines, Ltd., had given a most excellent lead to this movement by the formation of a corps on the mine. The company had very generously agreed to give valuable money grants to the best squads, and to make the ambulance movement on the property efficient to deal with accidents at any time. It had appointed a chief ambulance officer and five subordinate ambulance officers to take charge of the underground arrangements, while further ambulance officers would be appointed for the surface. Over a hundred men had signified their intention to join the corps, which was considered highly satisfactory. A sub-committee was appointed to draw up the conditions for the competitions for the underground, surface and colliery ambulance shields of the Chemical, Metallurgical and Mining Society and the Coal Owners' Association. It was agreed that these competitions be held towards the end of November. At the request of the General Manager of the Dynamite Factory, the same committee was appointed to draft the conditions for the inter-departmental competitions for a floating trophy at the Dynamite Factory to be held in December. A letter was read from the Rand Mutual Assurance Company, Ltd., notifying that employees of members of that company would be insured against all risks in ambulance competitions conducted under the auspices of the Red Cross Society under certain conditions laid down. In view of certain difficulties which had arisen at the competitions held last year, this voluntary action on the part of the company was considered highly satisfactory.

Manicaland Mineral Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of August, 1913, is as follows:—Reef: Mill: Gold won (fine gold), 380 ozs. 19 dwts. 5 grs.; tons crushed, 1,641; value, £1,599 19s. 1d. Concentrates (estimated): Gold (fine gold), 34 ozs. 5 dwts. 18 grs.; tons, 6·5; value, £145 14s. 5d.; silver and lead value, £32 9s. 10d. Cyanide: Gold recovered (fine gold), 16 ozs. 8 dwts. 14 grs.; tons treated, 108; value £69 0s. 1d.

A Diamond Washing Fiasco.

Sopa Diamonds, which, although a South American property, are still dealt with by some of our London contemporaries in their African section, have had a gigantic wash, and the result is a gigantic failure. The following cable, dated Diamantina, September 3, was received in London in mail week:—"Returns for August as follows: 20,070 loads yielded 16 carats; estimated value, £91, or 1d. per load. Shipped 221 carats: estimated value, £1,282. August 28. Have been stopped seven days for want of fuel. Fuel supplies will allow us to wash until end of September. During month of September other parts of paddock will be tested. Judging from result of work done during month of June and two following months there is so much very low grade ore that proposition not payable worked with present system. I propose to as soon as I can make arrangements return discuss with board of directors future policy. In the meantime will arrange further tests with hand-washing pan." As an English exchange remarks: "Apparently the manager is not prepared to abandon the property as worthless." Such persistency, however admirable it may be, is likely to be very costly.

Kroonstad Coal Estate

The directors' report, which was presented at the annual meeting of the Kroonstad Coal and Estate Company at Kimberley last week, stated that the winning of coal had been carried on regularly during the year, and development work had been kept in advance of requirements. The value of coal sold was £20,173 4s. 7d., the output being 2,090 tons in excess of last year. The proposed railway lines, which had been sanctioned by Parliament, were expected to enhance the value of the company's estate. Farming operations and tree-planting had been carried on successfully. A dividend of five per cent. was declared. Mr. C. E. Nind, in moving the adoption of the report, which was agreed to, spoke of the increasing value of the company's land. The coal won, he said, was of improved quality, and the hope was expressed that the Government would take supplies.

THE WEEK IN THE SHAREMARKET.

Quiet, but Steady—Good Market in Far East Rand Shares and Diamonds Expected.

The market remains quiet and featureless, except for some activity in Pilandsbergs. With the small capital and, according to the experts' reports, very glowing prospects of this syndicate, there are the possibilities of a mild flutter, even in a dull market. Among Rand stocks, Van Ryn Deeps are easily the most active, and development is said to be excellent. Brakpans and State Mines are a little easier, but Wit. Deeps are in more demand. Some of the smaller Far East Rand shares are being picked up by speculators, and an increase of interest in that district is expected. Tins remain quiet, on the unfavourable outlook for the market in the metal, and diamonds are still first in the popular fancy. Frank Smiths are washing again, the plant running smoothly, and everything points to much increased returns. Crown Diamonds are to extend operations, and the prospects are steadily improving.

Regarding Rhodesians, the news from London provides one or two features of interest. Chartered are a consistently good spot; the shares are being steadily bought, and large call options are being taken by shrewd people, who evidently anticipate an early move. The biggest rise has, however, been recorded by Giants. At first it was rumoured that the long-lost seventh level had been located; but more lately the rise is accounted for by a statement that the company is going to secure an important interest over a portion of the unexplored ground belonging to the Cam and Motor. Falcons hardened, on the excellent results shown by the independent sampling which was arranged for when doubt was thrown upon previous estimates in the spring. The mine has come through the test with flying colours. Cam and Motor and Globes have been purchased, as have Eldorados, on the excellent quarterly report.

	Friday, 26th.	Sat., 27th.	Mon., 29th.	Tues., 30th.	Wed., 1st.
African Farms..	15 3	15 0B	14 11	14 6	14 6B
Apex Mines	20 0s	22 0s	20 0B	19 6s	18 0B
Bantjes Consolidated ..	14 0B	14 0B	14 6B	14 0B	14 0B
Benoni Consolidated ..	2 3B	2 0B	2 6s	2 0B	2 3B
Blaauwbosch Diamonds ..	—	—	—	—	
Brakpan Mines	56 0B	56 0B	56 0B	56 0B	55 0B
Breyten Collieries	26 0B	25 0B	25 0B	25 0B	25 0B
Bushveld Tins	—	—	—	0 6B	1 0s
City & Subs. (£4)	44 0B	45 3B	45 3B		45 6B
City Deeps	53 9B	54 0B	53 6B	55 0B	54 0B
Cloverfield Mines	4 3B	4 3B	4 2B	4 2B	4 1B
Clydesdale Coolieries ..	8 9s	8 3B	8 3B	8 0B	8 3B
Cons. Langlaagtes	25 6		25 0B	25 0B	25 6B
Cons. Main Reefs	17 6	17 3B	17 3B	17 0B	16 9
Cons. Mine Select.	8 6B	8 0B	8 3B	—	8 9B
Coronation Colls.		13 0s		—	
Coronation Freeholds ..	0 5B	0 5B	0 6s	0 5B	0 5B
Crown Diamonds	10 3B	10 3B	10 0B	10 0	9 6
Doornhoek Tins	6 0B	5 9B	5 10B	5 10B	—
East Rand Centrals ..	7 9B	8 3s	7 9B	8 0B	8 0
East Rand Coals (2/6) ..	1 9B	1 10B	1 9B	1 9B	1 9B
East Rand Deeps	1 5B	—	—	1 6	—
East Rand Props.		—		45 0B	45 6
Frank Smith Diamond ..	9 3B	9 6B	9 10	9 7B	9 0B
Geduld Props.	22 6B	23 3	23 0B	—	22 0B
Glencoe (Natal) Colls. ..	7 0B	7 0B	7 6	7 3B	—
Glynn's Lydenburgs.. ..	16 0s	16 0s	17 0s	—	—
Government Areas	20 3B	20 9	20 6	20 6B	20 6
Jupiters		—	4 6B	4 6s	4 6s
Kaalfontein Deep (2/6) ..	0 5B	0 5B	0 5B	0 3B	0 4B
Klerksdorp Props.	2 2B	2 2B	2 2B	2 2B	2 2B
Knight Central	6 6B	6 6	6 6	6 3B	6 3B
Knights Deeps	35 0s	35 0s	—	34 6s	35 0s
Lace Props.	2 10B	2 11B	2 9B	2 10B	—
Luipaardsvlei Estate ..	7 6B	7 6B	7 6B	—	7 6B
Lydenburg Gold Farm . ..	2 9B	2 9B	2 9B	2 9B	2 9B
Main Reef Wests	9 0B	8 9	8 6B	8 3B	8 3B
Middlevei Estates	1 0B		1 0B	1 0B	—
Modder B's	76 0	75 9B	75 0B	76 0	75 0B
Modder Deep	30 9	30 6B	30 3	30 6	30 0B
Natal Navigation Col. ..			14 0B	14 0B	14 0B
New Era Cons. (5/-) ..	6 3B	6 3B	6 3B	6 3B	6 3B
New Geduld Deeps	2 0B	2 0B	2 0B	2 0B	2 0B
New Kleinfonteins	22 9B	23 3	22 9B	22 0B	21 9B
New Modders	227 6B	227 6B	—	220 0B	—
New Unifieds.	12 0B	—	14 3s	12 0B	12 0B
Nigels	15 0B	—	15 0B	—	—
O.F.S. & Trans. Diamonds	1 9B	1 11	2 0s	1 9	1 6B
Pickstone Golds	40 0s	—	—	—	40 0s
Premier Pref.	—	—	—	175 0B	175 0B
Pretoria Cement Co. ..	46 6B	46 6B	45 0B	47 0s	—
Princess	4 0B	4 0B	4 0B	4 0B	4 0B
Rand Collieries	3 0s	3 0s	3 0s	3 0s	3 0s
Rand Klips	1 8B	1 8B	1 8B	1 9B	—
Rand Nucleus	1 9B	1 9B	1 9B	2 0s	—
Randfontein Deeps	2 10B	—	—	3 0s	—
Randfontein Estates ..	26 9B	26 9	26 3B	26 3B	26 3B
Roberts Victors	30 0B	30 0B	—	—	28 0B
Robinson Deeps	32 0s	28 0B	—	—	—
Rooiberg Minerals	27 6B	27 6B	27 0B	27 0B	27 3B
Rose Deeps	48 9B	48 9B	—	—	—
Ryan Nigels	—	3 0B	—	3 0B	3 0B
Shebas..	5 0B		—	5 0B	5 0B
Simmer Deeps	2 0B		—	1 6B	—
S.A. Breweries	40 0B	40 0B	—	40 0B	—
S.A. Lands	3 3B	3 3B	3 3B	3 3B	3 3B
Springs Mines	15 9B	15 9B	15 6B	15 0B	15 6
Sub Nigels	9 0*	10 3s	9 3B	9 3B	9 0B
Swaziland Tins	48 0s	—	46 0	46 0B	—
Trans. & Delagoa	—	—	27 6B	37 6B	—
Trans. Coal Trusts	33 6B	32 9B	32 0B	32 6B	32 6B
Trans. G.M. Estates ..	53 6B		53 6B	—	—
Van Ryn Deeps	35 3	34 6	34 0B	34 3	34 0
Village Deeps	—	—	—	—	37 6s
Vogel. Cons. Deeps ..	—	—	—	1 0s	0 9B
West Rand Estates ..	—	3 0s	—	2 6B	2 6B
Witbank Collieries	39 0B	39 0B	39 0B	39 0B	39 0B
Witwatersrands	67 0B	67 0B	68 0B	68 0B	68 0B
Wit Deeps	55 6B	55 0B	—	56 0	55 0
Wolhuters	14 6	14 0B	15 0s	14 9B	14 0B
Zaaiplaats Tins	35 6B	35 6B	—	35 0B	35 0B

B Buyers. S Sellers. * 22 Shares. † 120 shares.

MINING MEN AND MATTERS.

Mr. H. A. Neame has joined the board of directors of Messrs. S. Sykes & Co., Ltd., and is carrying on business at Central House, Simmonds Street, instead of London House, as formerly.

* * * *

The Transvaal Miners' Association, the Association of Mine Managers, the Chemical, Metallurgical and Mining Society, and the B.S.A. Explosives Co., Ltd., have joined the South African Red Cross Society as corporate members, while the East Rand Proprietary Mines, Ltd., and Messrs. Barnato Brothers have each kindly donated £25 to the funds so urgently needed, of the same Society.

* * * *

By the kind invitation of the Union Astronomer, Mr. R. T. A. Innes, F.R.A.S., the members of the Chemical, Metallurgical and Mining Society are paying a visit to the Observatory on Saturday afternoon, the 4th October.

* * * *

At the Afrikander meeting on Wednesday, the acting chairman, Col. Dalrymple, said they would all deeply regret the indisposition of their chairman, Dr. Schlesinger. The latest news from Europe was that the doctor's condition had improved, and they would all wish him a speedy recovery.

* * * *

Sir Lionel Phillips has been elected to the Executive Committee of the Transvaal Chamber of Mines in place of Mr. R. W. Schumacher.

Roberts Victor Diamonds.

The following was the result of operations at the Roberts Victor Diamond Mine for the Month of September:—19,286 loads washed yielding 6,327½ carats.

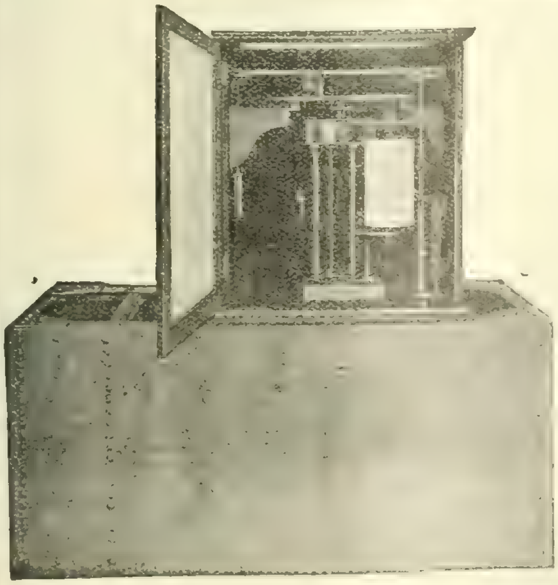
Blaauwbosch Diamonds.

The Secertary informs us that the washing returns at the Blaauwbosch Diamond Mine for September are as follows: 8,687 loads washed, 1,741 carats recovered, or 20·04 carats per 100 loads treated.

Engineering Notes and News.

Electricity Undertakings for Small Towns— Points to be Considered—Important Paper by Professor Bohle.

"The Supply of Electricity for Small South African Towns" was the subject of a paper read by Professor H. Bohle at a recent meeting of the Institute of Electrical Engineers (Capetown Local Section). He said:—During the last twelve months considerable activity has been witnessed throughout the Union as regards the supply of electricity for small communities. A large number of small towns and even villages have either work of this nature in hand or have carried it out already, or are contemplating it. The conditions of supply are, of course, entirely different from those in Europe. Our country towns and villages are very small and the distances between them very great. It is, therefore, impossible for one power station to supply a number of communities, except in isolated cases, and each municipality must build a station of its own. Such supply undertakings will therefore always be small, seeing that practically no town has a population exceeding 7,000 inhabitants, and many hardly more than 2,000. The size of the plant is consequently also limited, and will scarcely exceed 200 kilowatts. It must be added that little manufacturing goes on in any of these towns, which would necessitate the installing of many motors. Production of wool and ostrich feathers, cattle and sheep breeding are our principal industries, to which we must add the wine industry in the Western Province. The distilleries have, however, their own plants, as they require steam as well as power. Jam and match factories, soap works, carriage building works, sheet metal works are mostly near large towns, where they can be easily supplied from a large centrally situated station. I doubt whether for agricultural purposes electric power will ever be used to any extent, since most farms are at considerable distances from the towns and the little power required would not justify the transmission over long lines. It follows therefore that power is chiefly wanted for lighting purposes, with a little for cooking and heating. It is certain that for the latter purpose the wants will materially increase in the future, especially if current can be supplied at a reasonable cost. We must also remember that our dark days are few in number and may be considered non-existing, while the daylight even in winter lasts till nearly six o'clock and in summer till eight and longer. Moreover, people in this part of the world go to bed early and after eleven o'clock little light is wanted, even in the streets. Then we must remember our bright moonlight nights, when artificial street lighting is unnecessary. Adding to this the high price of fuel, whatever its nature may be, which in some cases has even to be carted for miles after it leaves the railway station, it will be obvious that in this country electricity cannot be sold at European figures. Fortunately, this disadvantage is largely counterbalanced by the greater buying capacity of the South African, one person being about equal to two Europeans. Professor Bohle pointed out that in order to protect municipalities against financing unsound schemes and to see that where sanction was given the municipality received value for money, the Government had drawn up regulations governing the erection of electrical plants. He protested against the long delays which were caused by the necessity of sending all plans and specifications to Pretoria. It was preposterous that in this large country each Provincial Administration had not a competent engineer of its own to advise on technical matters. Moreover, if the Government Engineer happened to be on leave, work was at a standstill. In one of his own cases it took six weeks to find a substitute for the electrician away on leave in England in order to advise on tenders received, a time long enough for any firm to refuse signing the contract, for instance, through a rise in copper. It took even longer to get the sanction of the postal authorities, due to the fact that the plans were apparently lost between the Administrator's office in Capetown and that of the Post Office in Pretoria. Moreover, it did not infrequently happen that the plans were sent to the wrong quarters, where they disappeared for a time. Surely, the public had a right to see that its work was carried out in a more expeditious manner than this! Proceeding, Professor Bohle said: We have already seen that the areas which are to be supplied with current are mostly small and that low voltage systems are employed. Whatever system is decided upon the consulting engineer should see that the total annual costs are a minimum. For small communities the cost of equipment must be kept as low as possible, of course only as far as it is feasible with regard to the total annual costs. The cheapest plant is not always the most economical one. In order to keep the running costs down, it is advisable to do the work of the day in one shift. This is feasible, as practically none or little current is required from morning till lighting up time. It is then possible to run the station with a very small staff, but it means the installation of a secondary battery. This also settles the type of plant, which has to be of the direct current class, independently of such reasons as the greater efficiency of the distributing network, and of small motors and the greater life of metal filament lamps on direct current. With a one-shift day, the battery will have to be fairly large in many cases, but such a battery provides considerable reserve plant in case of breakdowns or during times when the load is largely above the average. This may, for instance, occur on Sundays, when all the churches are switched on. For a one-shift day the generating plant has to be larger than the average load justifies. The total work, which is taken out of the battery from shutting down to restarting, plus the conversion losses, must be added to the consumption during the working period. Thus, if the output of a station during the time is 150 units, and for the remainder of the 24 hours 20 units, the generators must do about 175 to 180 units. For very small towns the 220 volt two wire system is suitable. As South African towns are, however, somewhat straggling, the three-wire volts between the outer system is usually superior. A considerable amount of copper is thereby saved. 220 volt tungsten lamps are now as satisfactory as 110 volt lamps, and they may be obtained down to ten candles. It is, however, rare that lamps below 25 candles are installed nowadays. The type of prime mover depends upon the locality and the size of the plant. Water power is available in a few places only, and there not always in sufficient quantities throughout the year if periods of drought occur, necessi-



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tating the installation of reserve oil or steam plants. The choice is thus chiefly limited to oil engines, suction gas plants, and steam plants. They are limited to towns near coal fields, near the coast or on the railway line, for which freight charges are not excessive. Where coal is cheap, the portable steam engine or locomotive has many points in its favour. It is simple and easily handled, and there are everywhere people to be found who are acquainted with the driving of steam plant, if with no other kind of engine. The price of a superheated steam locomobile is about equal to that of a suction gas plant of similar size, but less space is required for its accommodation, as the engine is usually placed on the top of the boiler. The efficiency of these plants is comparatively very high, and the consumption of coal for a set of normally 60 horse power does not exceed 2⅓ lb. per horse power hour, assuming a calorific value of 13,500 B.T.U. per lb. of coal. Steam engines have the advantage over gas or oil engines that for the same co-efficient of speed variation they require a much lighter fly-wheel, that they can be much more heavily overloaded, and that the fuel consumption does not increase materially with a decrease in the load. Moreover, the output of a steam engine is independent of the altitude. On account of the more regular turning moment and the lower temperatures, the wear and tear of the steam plant is smaller than with any other type of prime mover. Suction gas is used extensively throughout the country, the fuel used being chiefly anthracite, in some cases charcoal. The anthracite has to be imported, as the Colonial material is of a very inferior quality. Welsh or Scotch anthracite is mostly employed wherever charcoal is not available. I have, however, little doubt that suitable coal will be found in this country. On the Continent of Europe brown coal is now extensively used, and it is this kind of cheap fuel which has brought the suction gas engine so rapidly to the front. The brown coal is made into briquettes, and as these do not produce any slag, cleaning during working is not necessary so long as the ashes are regularly withdrawn. With an increase in the altitude the power of a suction gas plant decreases about 3 per cent. for every thousand feet rise. Various types of oil engines may be installed. For very small outputs, the gasolene type is suitable, as they can be obtained in different sizes up to 25 kilowatts. Gasolene engines are of the four cylinder, four stroke cycle vertical type, directly joined to the generator, as they run at high speeds. The whole arrangement has a neat appearance, takes up very little space, and the machine may be run by a partially skilled labourer. The Diesel engine is at present undoubtedly the most economical one on the market, as it has the highest thermal efficiency obtainable (over 35 per cent.). This fact is not to be underrated for places for which freight is very high, and in all places where towns lie away from the railway; and where charcoal or ordinary coal is not available, it appears to me that the Diesel engine is the only possible proposition, in order to keep the freight costs at all reasonable. Moreover, the unrefined oils, which are cheaper than refined materials, may be used, and the engine has the advantage that it is always ready for work. The more expensive Diesel engine may sometimes be replaced by a modified ordinary oil engine. The choice of prime movers depends on so many things that a careful study has to be made in each individual case. A suction gas plant may be preferable in one place and be entirely unsuitable in another, and this holds for oil engines and steam locomobiles as well. As regards the capital costs there is little to choose. For a plant consisting of two 60 horse power sets the difference in prices for steam, suction gas and Diesel engine plants were negligible. The slightly lower price for the suction gas plant was more than compensated by the increased cost of the building. To this must be added that for oil engines no labour is required for stoking purposes, so that the wage bill will be lower and the money thus saved may go towards buying fuel. On the whole, I think that the question of the cost of fuel is largely over-valued by manufacturers, at any rate, for this country. The principal costs are made up by wages, depreciation, interest and sinking fund and the cost of fuel itself hardly exceeds 12 per cent. The saving in fuel costs with one system may thus easily often be counterbalanced by the wages which have to be paid to a single stoker.

(*To be continued.*)

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This invention relates to that type of mill in which rolls are employed for reducing the material, and can be constructed and arranged to pulverise or comminute the material in two stages, and can be constructed of any designed size or capacity. According to this invention, two sets of rolls are employed, the one set being superimposed or arranged above the other, the lower set supporting the upper set by means of bearings fixed on revolving grinding plate or pan, and is carried by the spindles of the bottom set of rolls. The weight of the rolls may alone be constructed to reduce the desired material, or hydraulic or spring pressure may be arranged to operate on the upper set of rolls, this said pressure being transmitted from the upper set to the lower set of rolls. Springs, being preferable for supplying the additional pressure, are arranged to operate directly on roll spindles of the upper set. In constructing this mill the sole plate supports are annular grinding plate. This plate is constructed of any desired segments, readily renewable when worn Arranged upon this annular plate is any desired number of rolls, and these are connected by means of adjustable bearings from the upper or revolving grinding plate. On the said bearings is fixed the receiving casing or cylindrical receiver for the material overflowing the upper flanged grinding plate. Upon this upper grinding plate is a further set of rolls, which are preferably of a larger diameter than the lower set. Arranged beneath and around the upper grinding plate, which is between the two sets of grinding rolls, is the already mentioned cylindrical casing, suitably shaped, and secured to the spindles or bearings of the lower set of rolls, so that it rotates therewith. This receiver is constructed with inwardly inclined chutes, which serve for conveying the material to points near the inner edges of the periphion thereof. The receiver is constructed on the inside to protect the outside of the rolls and thin bearing spindles, and so that the material is introduced between the rolls near the inner edge of the annular grinding plates. A centrally placed feed chute or hopper with suitable outlets is provided above the upper set of rolls, and supported in any convenient manner, from whence the material is operated upon by the three upper rolls, and, when sufficiently reduced, passes through the annular screen or perforated plate, and falls into the cylindrical receiver, passing to the lower set of rolls, where it is further crushed to the desired degree of comminution determined by the mesh of screening employed. This machine can be readily adapted for dry grinding, in which case a current of air will be caused to circulate through the machine, and the water supply will be dispensed with. When used as a dry crusher the mill will be cylindrically enclosed. Having given a brief description of this mill, it may be said the inventor's objective has been to design a mill that would synchronise with the science of the cyanide process or adaptable to the various conditions encountered in ore reduction,. and working under ordinary conditions will embrace economy, efficiency, durability and simplicity. Mr. Rodgers' original idea when designing his mill was to further reduce or slime old residues, known to contain good values, and by the application of the cyanide process recover their exposed contents. Since, however, the possibilities in this direction are very limited, Mr. Rodgers has adapted his mill to reduce the ore directly from rock breakers after being reduced to the limits of their economy, say 1in. cub. When the ore has been reduced from 1in. cub. to 4 mesh in the upper rolls, it passes to the lower or fine rolls, where it can be reduced to the finest designed degree of comminution, as a tube mill regrinds stamp mill product, so also would the mill be useful. The desired economy of this mill is to work directly with rock breakers, thereby saving an enormous initial expense of a stamp battery, cost of maintaining same, conveying pebbles to tubes, and the large amount of water necessary for tubes, including the operating labour, will be saved. This mill will grind, per roll used, equivalent to any other mill of this type, due to the advantage of the fine grinding being done separate from the coarse, or due to the rolls being kept in close contact with the die ring on the lower set of rolls. The top set of rolls having to receive large particles of ore, must rise and fall, thereby making fine grinding difficult. This mill has the advantage of being adjusted to reduce hard or soft ore, for, unlike most other mills of this type, the rolls are not more than 2ft. diameter, and do not depend on their gravity weight to reduce the ore, but get their crushing pressure independently from the powerful springs. It is obvious, therefore, that the saving in horse power with this mill is considerable, not having to revolve rolls of large diameter and of enormous weight, which in other types must mean a large item in power consumption. Small rolls have other advantages, such as removing or renewing of the rolls. For instance, when a roll tyre breaks or gets loose, it can be removed and renewed and adjusted again in a matter of 15 or 20 minutes, without the use of tackle, etc. Buyers may do well in studying the possibilities of this machine who contemplate extending or constructing new plants, when it is known that more than one-third of the ore coming from Rand mines is less than 1in. cub., and if kept separate could be treated finally with this mill, obviating a more expensive construction, also operating and maintenance expense. The periphrion of the upper rolls may be flat or curved, corrugated or otherwise constructed for coarse or intermediate grinding or suitable for requirements.

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Automobile Notes.

The following is the important paper read before the Imperial Motor Transport Conference held in London in July, 1913, by Mr. W. W. Hoy, General Manager of the South African Railways and Harbours:—

In submitting a paper on the above subject, I think it is necessary to digress somewhat from the subject matter and widen the scope of the enquiry, more particularly as regards the local conditions obtaining in South Africa, where, as perhaps in few other countries, the internal combustion engine, in its various adaptations, both for road transport and all agricultural work, is destined to play a most important part. In this country of such enormous distances, where we have, unfortunately, to combat scourges, drought and animal diseases, the authorities and inhabitants generally are fully alive to the valuable assistance that is placed at their disposal by the advent and development of the internal combustion engine, and the new methods of mechanical work opened up thereby. All developments and experiments made in other countries are closely watched by the authorities in South Africa, and the future development of the resources of this country will undoubtedly be assisted, or even made possible, by an extended use of the valuable forces now available in the form of mechanical haulage and mechanical farming operations. Having mentioned farming operations, I will dismiss that subject with one remark to show how important and necessary mechanical haulage is to the agricultural development of the country. When ploughing is done by animals, farmers have to wait for rain before these operations can be commenced, and so much valuable time is lost, whereas with mechanical ploughing the hardest veld can be worked, and the soil is then ready to absorb the rain when it falls, instead of its running uselessly off the land and taking the best soil in its course. With mechanical ploughing sowing can then be done after the falling of the first rains, and this is of inestimable value to the farmer. The progress that has been made in constructing and perfecting road motor vehicles has been keenly followed by the South African Railway authorities, and the use of road motor transport is regarded as a system especially suited to South African conditions, and it is thought that the system should prove of great value for developing outlying districts sufficiently until the traffic offering justifies the construction of a line of railway, when the motor vehicles would be available for use in the development of other districts. The first serious attempt to introduce mechanical road transport was during the latter part of the South African war (1899-1902), when steam traction engines were used to a very considerable extent hauling two or more trailers to convey provisions and material to the blockhouse lines and outlying posts. Expense in this case was a secondary consideration, the sole aim being to get loads to destination, and though efforts were made to carry on a steam road transport service after the war, they were abandoned owing to the condition of the roads and the question of fuel and water. As regards the use of self-propelled vehicles for the delivery of goods at the larger towns where the roads are good, the conditions approximate very closely to those found in Great Britain and the Continent, and the Railway Department has for several years successfully used these vehicles in Johannesburg, where the fleet consists of 21 traction engines, tractors and lorries. It is found that for general purposes the light tractor is the most suitable and the best revenue-producer, as the engine is not compelled to remain idle while its cargo is being loaded or unloaded. Owing to the absence of large manufacturing houses, the solution of the lorry question by the use of detachable table tops, as used in Manchester and elsewhere, is hardly applicable to present conditions in South Africa, and this system is not expected to displace the tractor with the load carried on trailers. For luggage and parcels delivery the smaller lorries have been a great success, and the service has been much improved by the use of these vehicles. The success of any road transport service almost entirely depends upon the provision of good roads, and this road question forces itself irresistibly to the front, as no matter how perfect the organisation may be, or the vehicle used, if the roads are not good, the service will of necessity be slow, inefficient and uneconomical. South Africa, unlike Great Britain and other European countries, owes the development of its interior to its railways. The roads are, except in the older established districts and in the neighbourhood of the larger towns, mere tracks across the veld. In many cases, however, the veld affords really good road surfaces, but soft sand is frequently encountered, over which vehicular traffic is difficult. Unbridged rivers, spruits and dry dongas present further obstacles, though rivers are usually fordable except during heavy rains. During the rainy season the veld roads at times become impassable, even for ox wagon transport, and the only vehicles that can get through are heavy tractors with the occasional use of "spuds" on their driving wheels. The macadamised or hard roads which exist are generally good, are well constructed and efficiently maintained, and in mountainous districts some fine examples of road engineering are to be found. There are instances where the road ascends uninterruptedly for miles, rising from 1.200 to 2,000 feet by continuous gradients averaging from 1 in 10 to short occasional stretches of 1 in 7. It has been said that "transport is the essence of civilisation," and if this holds good for other parts of the world it applies one hundred-fold to South Africa, where distances are so great, and outlying communities require means of communication with other parts of the Union. Isolated districts with vast capabilities,

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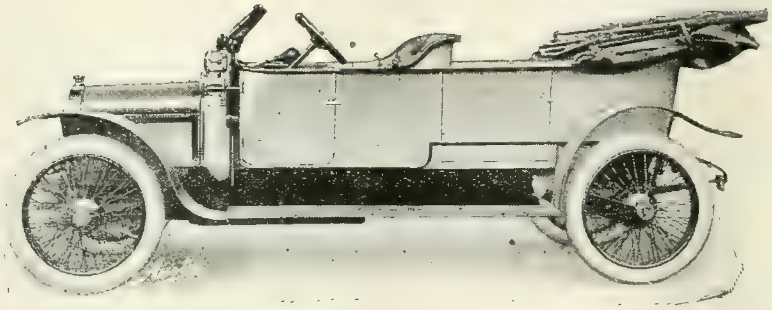

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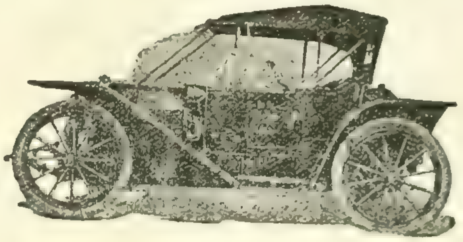
agricultural and mineral, are to-day lying fallow for want of means of transport; valuable deposits of salt lie untouched for the same reason, and workers find little reward for their labours, as they are unable to dispose of the results of their industry. In spite of the large sums spent annually in South Africa in building new railways it is impossible to provide communication to many districts which call for assistance in their struggle for development, nor can the country continue indefinitely to bear the costs of the deficits on developing railway lines. As regards organisation, South African conditions lend themselves to the successful operation of road motor services. In the first place the South African Railways are State-owned, and motor services as feeders to the railways can be worked as branch services, the organisation being, as far as possible, on railway lines. In addition to this, the co-operation of other Government Departments, such as Posts and Telegraphs, Public Works and Police, affords additional opportunities for serving the best interests of the public. Obviously, it is to the advantage of the public to deal with one organisation, and to be able to have its traffic conveyed from one part of the country to the other without the intervention of a third party; though bookings of passengers and goods can be effected, and information concerning railway train services, etc., can be obtained from the staff engaged on the motor service. The system of administration followed throughout the South African Railways is that known as the "transportation" system. This system lends itself to the establishment and working of road motor services; the transportation officer in control being able to direct the road transport as an integral part of the railway service in his district. As an instance of the co-operation with other Departments, in the road motor service now in operation between Bot River Station and Hermanus the depôt had to be established at the latter place, where the postmaster controls the motor staff and running details of the service. A motor garage has been built and equipped with the necessary tools and appliances for cleaning and carrying out running repairs. As a rule the motormen are capable of doing this work, but for heavy repairs special fitters are sent out, or the defective parts sent in to the nearest railway mechanical depôt. A varied assortment of spare parts is kept on hand under the charge of the stationmaster or postmaster, who isues only on receipt of the necessary requisition. In this manner the cost of repairs and renewals of each vehicle is accurately kept. In the matter of spare parts it cannot be too strongly emphasised that this item should be most carefully supervised, so that vehicles can be kept in commission continuously until they go into the shops for general overhaul, as any interruption to the service or failures on the road would bring the new method of transport into disrepute and create a bad impression. For that reason also the carried. Forms are also provided for accident or failure report, giving the nature and cause of the failure, time of occurrence and length of maintenance must be placed in capable hands, as economy in these two particulars is, without doubt, false economy. All oil, waste, etc., is measured out as required, and an underground system of petrol storage and a special registering petrol and paraffin pump is provided, so that the exact quantities of fuel consumed by each vehicle is recorded. The vehicles used are fitted with speed and distance recorders. Daily records of mileage and speeds are registered. A working time book is issued to the staff, giving the running schedule times and general instructions, similar in many respects to that issued for railway work. Motor drivers are also required to fill in a form called the "motor drivers' trip journal," on which are given the actual runing times at each stopping place, the miles run as indicated on the speed recorder, and the number of passengers, parcels, mail bags and weight of goods delay involved. On the same form is provided space for detailed cost of effecting the repairs. Where possible, a motor driver always drives the same vehicle, thereby enabling comparisons of results in the matter of fuel economy and the cost of upkeep to be made between different drivers on similar machines.

(To be continued.)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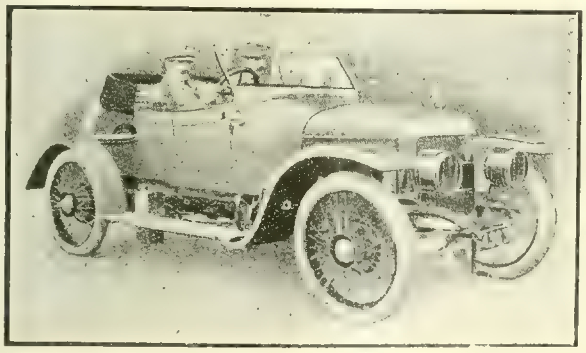
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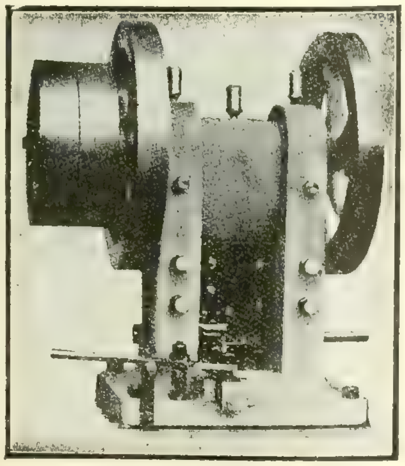
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413. John Sellers Bancroft and Mauritz Christian Indahl.—Improvements in or relating to perforating and other key operated machines.
414. George Spence.—Improvements in vacuum filters of the drum type, as used in beneficiating precious metals and for other industrial purposes.
415. John Conlong.—An apparatus to act as air filter for gathering and allaying dust and the like in mines.
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419. Clifford Edwin Dowling and John Frederick James Palmer.—Improved means to prevent bottles being refilled.
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422. Dr. Ernst Friederich.—A tungsten incandescent lamp.
423. Charles Lyman Tolles.—Improvements in and relating to traction belts.
424. Henry Robertson Lawson.—Improvements in assay furnaces.
425. Raoul Pierre Pictet.—Improvements in and relating to the manufacture of hydrogen and hydrogen mixtures.
426. Raoul Pierre Pictet.—Process and apparatus for the separation of gaseous mixtures into their constituents.
427. Dudley de Ros and Varexo Droppers, Ltd.—Improvements in and relating to the mode of securing wire or the like to droppers or standards employed in wire fencing.
428. Prince Zachari Andronikoff.—Improvements in automatic locks.
429. Clifford Toon.—Means for use in caulking lead joints and iron pipes and mains.
430. B. Gray and A. B. Smith.—Improved clamp bracket for securing electric cables in shafts.
431. Percy Saunders. A mixture for lining centrifugal pumps and the like.
432 Jane Hitchin.—An improved fly catcher and the like.
433. Abraham Tregoning.—Improvements in dies or like tools for sharpening chisel bits for rock drilling.
434. Harry August Stockman.—Improvements in apparatus for reducing ores and recovering the metals therefrom, applicable also for reducing other materials.
435. Harry Silburn.—An invention for the protection of pneumatic tyres used on the wheels of motor cars, motor cycles, bicycles and like vehicles.
436. Robert Brown.—A safety device applicable to skips or cages used in incline or vertical shafts.
437. Andrew Allen.—An improved apparatus for purifying the air in mines and works.
438. Chas. Hulet van Nostrand.—Improvements in tillage machines.
439. John Godfrey Parry Thomas and The Thomas Transmission, Ltd.—Improvements in and connected with the suspension of rail car bodies and the like.
440. Callender's Cable and Construction Co., Ltd., and Chas. Warre Kay.—Improvements in supports for electrical conductors.
441. Edward Hector Lonsdale Hart.—Improvements in or relating to acetylene lamps.
442. George Anderson Robertson and Douglas Anderson Robertson.—Improvements in mills or apparatus for crushing ore and other materials.
443. Alfred Salmon.—Spark arrestor to prevent sparks escaping from the smoke stack of a locomotive or other steam engine.
444. Ernest Arthur Ford.—Improvements in means for binding the surfaces of sand dumps and the like.
445. John Crispin.—An improved step-ladder.
446. Walter E. Letty.—Guide rail and adjustor for sanitary buckets.
447. Ernest Arthur Ford.—Improvements in means for binding the surfaces of sand dumps and the like.
448. Guy Aubrey Chalkley.—Improvements in rock drilling tools.

Road Motor Services.

The service between Bot River on the Caledon Line and Hermanus and Mossel River, a distance of about nineteen miles, referred to in the last report of the S.A.R., was actually inaugurated in December, but, unfortunately, under most unfavourable conditions, owing to the bad state of the road and the non-completion of a deviation which was being undertaken by the road authorities. Notwithstanding the adverse road conditions, the service has been maintained and the results obtained are sufficiently good to indicate the great possibilities of this class of traction in country districts. Two passenger cars and one lorry are in use and the appreciation of the service by the public may be judged from the fact that in the month of December nearly five hundred passengers were carried, while in January the total was well over one thousand. The General Manager, in his report, adds:—" I trust that it will be possible soon to introduce similar services as an adjunct to the railway lines in other districts, and that the results will be equally favourable, as with a good road a motor service capable of serving a district of, say, 26 miles from a railway station, could be equipped and installed for the cost of about two miles of railway construction. Good roads, however, are essential to regular and economical working. During the year the Administration, at the request of the Native Affairs Department and of certain Chambers of Commerce, arranged for a road transport service, comprising 100 mules and 10 wagons with a full complement of white men and drivers, to be despatched to the Natal side of Pondoland, and for another service, comprising 100 mules and 10 wagons from Butterworth, the latter being subsequently transferred from that station to Port. St. Johns, where a very large quantity of grain had accumulated and was arriving weekly. This grain was distributed throughout the districts and soon dispelled all fears of famine.

Kleinfontein Estates.

The twelfth ordinary general meeting of shareholders in the Kleinfontein Estates and Township, Ltd., was held this week. The Chairman (Colonel Dalrymple) said: Gentlemen,—The directors' report, together with statements of account for the twelve months ended the 30th of June last, is before you for consideration. The operations for the year show a gross profit of £16,778, to which has been added the balance brought forward from the previous year, namely, £10,451, which gives a total to appropriation account of £27,229. From this sum an amount of £1,303 has been written off for depreciation. The number of stands sold is eighty-one. This figure shows a considerable decrease on the sales during previous years. Of the original township there remained at the 30th of June 467 stands unsold, and of the new extension 536. A piece of ground, in extent 4 morgen 460 square roods, was sold to the Municipality of Benoni for use as an abattoir site, and the Municipality are to be congratulated on the up-to-date plant that has been erected, through which all the meat consumed has now to pass the Public Health authorities. Another piece of ground, in extent 143 square roods, adjacent to the Benoni Railway Station, was granted to the South African Railway Administration for railway purposes. The water position has caused your directors a great deal of anxiety, owing to the abnormally small rainfall of the last two rainy seasons, the effects of which are being most acutely felt at present. The commercial community of the township of Benoni has gone through a very trying period; as, owing to shortage of working capital, mining development in the neighbourhood has been greatly restricted, a position which was seriously aggravated by the recent industrial upheaval. In sympathy with the restricted business activity of the town, your company's operations have shown a decline in volume as compared with the preceding year. The Municipality has laid water mains to the northern extension of the township, and it is expected, when conditions warrant it, residential sites in this area will be in greater demand. The interests of your company are closely allied to those of the community of the town of Benoni, and your directors have, as in the past, endeavoured to co-operate with, and support the work of the Town Council of Benoni. During the year interim dividends amounting to £17,000 have been declared. You are asked to confirm the action of the directors in making these declarations. I now beg to formally move the adoption of the report and accounts.

Anglo-French (Transvaal) Navigation

Coal Estates, Ltd.

(Incorporated in the Transvaal.)

Announcement of Declaration of Dividend No. 6, on 120,000 Cumulative Preference Shares.

NOTICE is hereby given that an Interim Dividend of 5 per cent. (equal to 1/- per share) has been declared by the Board of Directors, payable to all holders of Preference Shares registered as such in the Books of the Company, on the 7th day of OCTOBER, 1913, being a payment on account of the 7 per cent. Cumulative Preference Dividend.

Warrants will be posted to South African Holders of Preference Shares, on or about the 27th October, 1913.

By Order of the Board,

L. S. RAYMOND, Secretary.

Head Office :
National Bank Buildings,
Simmonds Street, Johannesburg,
30th September, 1913.

7553

The Week's Company Meetings.

SIMMER AND JACK.

Low Working Costs.

Question of Grade of Ore.

Ore Reserves.

Mr. F. D. P. Chaplin, M.L.A., presided over the fifteenth ordinary general meeting of shareholders of the Simmer and Jack Proprietary Mines, Limited, which was held in the board-room at the Consolidated Gold Fields Buildings. There were also present Messrs. Douglas Christopherson, R. Parnell, D. W. Rossiter, W. S. Smits, R. O. Stone, F. M. Cowan, and C. Hely-Hutchinson, secretary.

There were represented personally and by proxy 1,598,911 shares out of an issued capital of 3,000,000 shares.

The Chairman said: At the last annual meeting I was compelled to draw your attention to the fact that the average assay value of the ore reserves as compared with that of the previous year showed a decrease of about 10d. per ton, and to indicate that though there seemed no reason why that figure should not be maintained for a time, it was not likely to improve in the future. This anticipation has proved correct. The average recovery value for the first six months of the year under review was 22s. 7.079d., while for the six months ended the 30th of June last it was 20s 0.319d., which is about the present figure. In these circumstances it is obvious that unless working expenses could be very materially diminished, some decrease in the profit earned for the year was inevitable. Working costs for the year ended the 30th of June, 1912, having already reached the low level of 11s. 10.172d., and there being, as I pointed out last year, various factors telling against further reduction, under existing industrial conditions much relief of this kind could not reasonably be anticipated, and we may, I think, claim credit for having been able to reduce expenses for the twelve months now under review to an average of 11s. 1.193d., a reduction of, say, 9d. as against a reduction in the average recovery value of 2s. 8.652d.

Translated into money these results mean that during the year ended the 30th of June, 1913, we made a total profit on working of £471,954, as against £529,944, to which is added sundry revenue derived from dividends, rent, interest, etc., £38,075, against £33,247, making after deduction of profits tax, amounts written off, etc., a total profit of 459,362 as compared with £511,355 for the previous year. It has, therefore, been possible to pay two dividends of 7½ per cent. each, amounting together to £450,000, the distribution thus being the same as in the previous year, the balance remaining at credit of appropriation account at the 30th of June, 1913, being £111,340.

Having heard this summary of results you will scarcely require detailed examination of the balance sheet. The fund for additions to and renewals of machinery and plant now stands at £82,175, an increase of £10,690, a further appropriation equal to 5 per cent. of the amount distributed in dividends during the year having been made, less certain sums charged to working expenses and written off for additions. In the course of the year we have sold a number of stands or building lots which have realised net £10,717, and the figure at which property stands in the balance sheet has been reduced accordingly. Expenditure on equipment, less amounts written off, has been increased by £8,363. Particulars of the principal items are to be found in the manager's report.

For the Future.

As regards the future you will see from the superintending engineer's report that the fully developed payable ore reserve at the 30th of June last was estimated at 2,524,000 mine tons of an average mine grade of 5.4dwts., together with 406,000 mine tons of partially developed ore of an indicated grade of 4.7dwts. These figures compare with an estimate of 3,033,000 fully developed mine tons of an average mine value of 5.57dwts. and 495,000 tons of partially developed ore of an indicated grade of 4.78dwts. at the 30th of June, 1912. The fully developed ore, taking the results of the past year as a basis, is itself sufficient to supply the mill for nearly three years without reckoning on any of the very large tonnage of reclamation rock available and not included in the above estimate of reserve. It will be seen that there is a decline in the average grade of the fully developed ore of .17dwt., equal to 8½d. We think that in all probability the grade of the ore sent to the mill should be maintained throughout the current year. On the other hand, as will be seen from the manager's report, the time is rapidly approaching when there will be a considerable diminution in the quantity of ore derived from the outcrop and upper levels. This ore has been easily accessible and has thus lent itself to cheap working, and has helped us to maintain the tonnage crushed during such times as the present when native labour is very scarce, and but for this assistance the tonnage would have shown a serious decline. To compensate in good time for its gradual diminution, development in the levels is being pushed forward, especially in the south-western area of the mine, but, as was fully explained last year, mining, assuming other conditions remain constant, tends to become more expensive in proportion as we have to depend more and more on the lower levels. It remains to be seen, therefore, whether quite the same rate of profit per ton can be maintained. Every effort will, of course, be made to keep working expenses as low as possible, but the same factors as mentioned last year continue to tell against this.

Investments are practically the same as last year. Dividends have been received on our holding in the Breyten Collieries, Ltd., and on the Preference shares of the Victoria Falls and Transvaal Power Company, the supply of power from which company has been generally satisfactory. The sand-filling scheme to which reference was made at the last meeting has been completed and is giving satisfactory results.

During the year the mine has again been in charge of Mr. O. P. Powell, to whom as well as to his staff much credit is due for the efficient manner in which operations have been conducted.

I now beg formally to move the adoption of the report and accounts.

The report and accounts having been adopted, Messrs. William Hume and D. Christopherson, the retiring directors, were re-elected to the board.

Messrs. Thomas Douglas and T. A. White, I.A., were reappointed as auditors to the company.

SUB-NIGEL RETURNS.

Not Unsatisfactory.

Native Labour Supply.

The fifteenth ordinary general meeting of the Sub-Nigel, Ltd., was held in the board-room, Consolidated Goldfields Buildings, Mr. F. D. P. Chaplin presiding. Among those present were Messrs. D. Christopherson, W. T. Graham, D. W. Rossiter, W. S. Smits, R. O. Stone, J. Lignac, W. Gordon, J. H. Leslie, O. D. Wright, F. W. Baxter, F. M. Cowan, and C. Hely-Hutchinson, secretary.

The Chairman, in moving the adoption of the report and accounts, said: You will see from the report and accounts now before you that the results obtained during the year ended the 30th June last were not unsatisfactory. The profit from the year's operations after allowing for the expenditure of £3,560 on renewals and replacements of machinery and plant, was £28,566, which with the addition of £6,366 sundry revenue, less amounts written off, and after deducting £1,496 for Profit Tax, gave a net balance of £33,436. This compares with a balance of £8,208 shown twelve months previously. During the year ended the 30th June, 1912, however, as explained at the last annual meeting, the cost of all the work done in exploratory development with a view to obtaining information which would help to guide us as to the policy to be pursued in the future, was charged to working costs. The effect of this, of course, was that working costs were considerably increased and profits correspondingly diminished. During the year under review your directors, on careful consideration of all the circumstances, in view of the strong financial position of the company, and of the fact that apart from the possibilities of the large unexplored portion of the property there was good reason to anticipate for a time the earning of regular profits from the area already developed and in course of development, decided that it would not be fair to existing shareholders to continue to charge all such expenditure to working costs, and that part of it might reasonably be charged to capital account. The result of this decision has been, as the report of the superintending engineer now before you shows, that the sum of £7,962 has been charged to capital account, and profit for the year correspondingly increased.

Dividend Paying Stage.

The company has, therefore, been able to enter on the dividend paying stage, dividend No. 1 of 5 per cent having been declared in December, 1912, and No. 2 of 2½ per cent. in June last. During the year 56,172 tons were treated, an increase of 3,844, there was an increase of about 3s. per ton in recovery value, and a decrease of about 2s. 2d. in the working costs after allowing for the effect of transferring the £7,962 above referred to the capital account. Working expenses owing to the nature of the ground in this locality must always be high and considering the small tonnage over which the standing charges can be spread such charges constitute a serious item. This year, for example, claim licences were £5,646. equal to over 2s. per ton crushed. As regards the prospects for the current year you will see that at the 30th of June it was estimated that we had fully developed 132.500 mine or unsorted tons, of an average value of 7.8dwts. This compared with an estimate at the 30th of June, 1912 of 113,000 tons of an average value of 6.93 dwts. In addition it is estimated that there were at 30th June last 39,500 mine tons partially developed of an indicated grade of 8.1 dwts. The greater part of these reserves is in the area served by the B and D shafts.

And Dividend Prospects.

For the two months which have elapsed since the close of the financial year the working profits have only averaged about £1,000 per month, the grade having fallen chiefly owing to the enforced use of machine drills consequent on the scarcity of native labour. At the present time, as the result of the stoppage of recruiting and unsettled conditions produced by the recent strike, we have on the mine only 482 natives (equal to 60.17 per cent. of our complement) as compared with 628 in May last. It is to be hoped that in this respect matters will soon right themselves, and something like a normal supply of native labour become available. The possibility of sufficient profits being earned to admit of a dividend at Christmas time depends entirely on this. As regards the exploration of the very large area lying below the dyke, particulars will be found in the reports of the Superintending Engineer and Manager. In the E or westernmost shaft the reef was intersected in July last. The values found near the shaft were poor, but there has not yet been time to do sufficient work to enable any estimate to be formed, either of the position of the reef or its value. Work will be pushed on as rapidly as possible, but under any circumstances a considerable time must elapse before trustworthy information can be obtained, and at present the work is almost at a standstill owing to the absence of the necessary labour.

Financial Position.

As regards the financial position, you will see from the balance sheet that during the year under review £8,511 has been spent on shaft-sinking, £6,113 on equipment, of which £1,923 represents the cost of a new tube mill, while £7,962 was, as already explained, spent on exploratory development. The result therefore, is that at 30th June we had cash and realisable assets, after providing for the dividend which had been declared and all other liabilities, amounting to about £130,000, or including our investments which are practically the same as last year, to a little over £140,000, or rather more than 6s. 6d. per share of our issued capital. The position, therefore, apart from the shortage of native labour, is satisfactory, but it must still be recognised that considerable work must be done, which will take an appreciable time, before it will be possible to decide whether a policy of exploitation on a larger scale will be justified. In May last your manager, Mr. C. F. Parry, was ordered to England on some months' sick leave. During his absence the mine has been in the charge of Mr. C. N. Aspland, and to both these gentlemen and their staff the Board desires to express its appreciation of the efficiency with which the mine has been worked.

Messrs. D. Christopherson and E. Turk were re-elected to the directorate.

Messrs. Thomas Douglas and Roberts, Hays and Co., were reappointed auditors.

Crown Diamonds.

The following was the result of working at the Crown Diamond Mine during the month of September:—19,369 loads washed yielding 1,873¾ carats. This includes fine stones of 72, 21⅝ and 16 carats respectively. The washing capacity of the plant has not yet been reached, and arrangements are in progress for erecting a second aerial gear, and adding to the plant with the view of increasing the output at an early date. The slightly lower yield per 100 loads for September is due to the inclusion of an amount of poor ground from the mine, which is necessary until the cleaner blue ground is more fully opened out.

Defunct Companies.

Notice is given by the Acting Registrar of Companies, in accordance with Section 196 (5) of the Companies Act, 1909 (No. 31 of 1909), that the names of the following companies have been struck off the register and dissolved:—Alexandra Exploration and Developing Syndicate, Ltd.; Zoutpansbergsche Exploratie Maatschappij, Beperkt; Hennops River Lime Works Syndicate, Ltd.; Fern Gold Mining Company, Ltd.; The Samson Pulveriser and Milling Company, Ltd.; Heidelberg Coronation Proprietary, Ltd.; Victoria Gold Mines Syndicate, Ltd.; Madagascar Gold Mining Syndicate, Ltd.; South Bonanza, Ltd.; Bonanza Deep, Ltd.; South Ferreira, Ltd.; South Robinson, Ltd.; Rhenoster Spruit Diamond Syndicate, Ltd.; Inhambane Oil Union, Ltd.; The Godiva Mica Syndicate, Ltd.; Orient Trading Company, Ltd.; The Groot Letaba Exploration Syndicate, Ltd.; Star of Abercorn, Ltd.; The Madagascar Exploration Company, Ltd.; Schoen, Ltd.; The Donerhoycul Tributing Syndicate, Ltd.; L. A. Davis, Ltd.; Metals and Industries (S.A.), Ltd.; South African Aeronautical Enterprises, Ltd.; Northern Farms, Ltd.; Nylstroom Tins, Ltd.; The Chemists and Laboratories Supply Company, Ltd.; South African Mica, Ltd.; The Rustenburg Orange Export Company, Ltd.; Newtown Buildings, Ltd.; The Kismet Gold Mining Company, Ltd.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

INVESTORS' DIARY.

The following company meetings have been announced:—

Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5. New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.

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Notes and News.

The September Output. The September gold output was declared yesterday as we went to press. The total output for the Transvaal was 706,186 ozs., in value £2,999,686, as compared with 728,690 ozs., in value £3,092,754, for the preceding month of August. The decrease for the whole Transvaal is thus 21,910 ozs., or £93,068. The Rand output for September has been declared at 676,411 ozs., or £2,873,211, which is 21,275 ozs., or £90,370 less than the August return. The total production from outside districts last month was 29,775 ozs., or £126,475, which is 635 ozs., or £2,698, less than in August. As we show in more detail elsewhere in this issue, these returns must be regarded as extraordinarily good for a short month, affected by native labour scarcity.

* * * *

Underground Ore Crushing on the Rand. In our last issue we stated that the ore crusher in use underground in the Witwatersrand mine was the first installation of its kind to be employed below surface in a Rand mine. We have since ascertained that this statement is in error. Two rock breakers have been in use in the Crown Mines on the 13th level for the past sixteen months, and two more are about to be installed on the 16th level. The crushers have done very good work, and create but little dust. We regret the error, and are only too pleased to publish this correction.

* * * *

American Duty on Diamonds. At length a decision has been arrived at in the matter of the American duty on diamonds, and by the legislation consummated recently the United States Government have resolved upon increasing the tariff on cut stones from 10 to 20 per cent., while, moreover, a duty of 10 per cent. is to be imposed on rough goods. When first suggested, it was thought by many people interested in the diamond market on the other side of the "herring pond" that a 20 per cent. tax on cut stones would be a great incitement to smuggling, in fact, some importers maintained that such a duty would compel dealers to buy their stones from smugglers. Time apparently has brought about a change of view, for not only is the market more settled now that the actual decision is known, but, as a matter of fact, market optimism is everywhere expressed with regard to the future of the industry in the United States, which, by the way, absorbs no less than some 75 per cent. of the world's output of these precious gems.

* * * *

Bwana M'Kubwa. The full report of Messrs. Hooper, Speak and Co. on the Bwana M'Kubwa which has been published in London shows that the mine possesses great potentialities, but there is insufficient money in hand to tackle it on a proper scale. The engineers say "close down and develop." The results may demonstrate that a great low grade mine has been opened up, and in view of the showing in the first two levels it is hardly conceivable how the property can prove a failure. To sufficiently equip it after development would involve the expenditure of £500,000, and at the present moment only £50,000 to £60,000 is available. The directors are naturally in a quandary, but there is no doubt what should be done. If the money could be found, no doubt the directors would act upon the advice of the engineers. Under the present system of treatment no profit can be made, or no profit to any extent, so the property is [illegible] wasted.

* * * *

The State Mines Strike. The poor strike of reef in the south-west shaft of the Modderfontein Government Gold Mining Areas property recorded during the week has come as a considerable disappointment to those who have anticipated that in this shaft values in some degree corresponding to those noted in the south-east would be encountered. The ground in this section of the proposition is apparently much broken, and the value of 3 dwt's per ton represents, of course, an unpayable grade even if worked on the very large scale of operations which it is intended to do. But it would be folly to attach too much importance to the intersection of a poor section in one shaft in such an enormous proposition as this. The Company now has all four shafts on the reef, and development is actively proceeding. It will be time enough to consider the grade aspect of the mine when drives, etc., from each of these verticals have been carried out, and a substantial tonnage of ore has been developed.

* * * *

The T.G.M.E.

In the advt. pages of this week's issue of this journal will be found the balance sheets and reports of the Transvaal Gold Mining Estates in the Lydenburg district, the most important producer of gold, apart from the Witwatersrand mines, in the Union. In our issue of September 27th the speech of Mr. H. C. Boyd, the chairman, was reported at length, and it here remains only for us to summarise the results secured by the concern in the twelve months dealt with in the report. During the year ending March 31. 1913, the company made a net working profit of £277,417, as against one of £205,104 during the previous year, and the dividend rose from 27½ to 37½%, the highest ever paid. In all, 172,759 tons were crushed, yielding 54s. 4d. per ton, at a cost of 32s. 2d. and a profit of 22s. 2d. per ton. The ore reserves are:—

Section.	Stamps.	Tonnage	Dwt.
Central	60	385,547	14·2
Vaalhoek	10	40,892	10·4
Elandsdrift	5	30,210	15·0

When the ore is highly pyritic it is troublesome to treat, but, as a rule, little difficulty is experienced. The September returns of the Chamber of Mines show that the Company continues to make excellent profits.

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Pilandsberg Diamonds.

Shoals of inquiries relative to the possibilities of Pilandsberg Diamonds have reached us, and it is impossible to reply to all separately. An official statement has been issued to the effect that Mr. Dale Lace, the Chairman of the company, returned on Thursday from the property acquired in the Herbert District, and regards the representations made with reference to the property as being fully confirmed. Looking at the proposition as at present, some fifty claims are disclosed. There is a good possibility of large extension, but nothing certain can be said of that at present. The company's plant and prospecting gear from Pilandsberg were delivered during the week on the mine, and development and prospecting operations will be proceeded with with all despatch. There are water difficulties to overcome, but they are not insurmountable. The country round is covered with some ten to twenty feet of lime deposit, which also has to be removed. There are now some forty boys on the property. A new incline shaft with double track has been started. It is the policy of the board to proceed at once with the erection of two five-feet pans, which are now on the property, in order to prove the mine, and prices are now being asked for a complete new gear with a capacity of three hundred loads per diem. It is the opinion of the chairman that in ten weeks' time the gear could be erected and the property sufficiently developed to supply such gear. To this nothing, for the moment, can be added and shareholders can only be advised to "wait and see."

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The Minister of Mines on Tour.

Mr. Malan, Minister of Mines, accompanied by Messrs. Skeels and Trevor, and Mr. Wagner (Mining Commissioner of Pilgrim's Rest), have been visiting the Sabie, Pilgrim's Rest, and Barberton districts. At a public meeting at Sabie, a most important question was raised by Mr. Anderson with regard to the manner in which the Gold Law adversely affects mining operations in that district. He pointed out that the reef body, which is horizontal, averaged only 12 inches in thickness, of which 25 per cent. of the area only was payable; hence the actual working tonnage only averaged 1,000 tons per claim, or less than two months' crushing with a five-stamp mill. On the Rand, he said, the average tonnage on a vertical dipping reef was 40,000 tons, or six years' crushing with the same mill. At Sabie the licence money increased 17s. 6d. monthly every two months or even more. In disturbed formation it was sometimes necessary to pass through two or three claims before the ore could be mined. As diggers' claims could not revert to prospecting claims, as was possible under the old law, the owner had the option of continuing to pay £1 monthly for worked-out claims, or abandoning the claims periodically, which entailed the expense of re-survey every time. He instanced the case of a syndicate having to close down rather than incur the exhorbitant increase of the claim licences payable. He stated that the premier gold-producer in that district would never have reached the present flourishing position but for concessions which obviated the payment of accumulated licences. Mr. Munro, who supported Mr. Anderson, said it was possible to have 50 claims, of which 48 were worked out, and yet have to pay diggers' licences on the lot, although only working two. Mr. Trevor and Mr. Aimetti also corroborated Mr. Anderson's statement, and Mr. Malan, we are glad to note, replied most sympathetically, promising inquiry and reform of the law.

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Mining in German South-West Africa.

The annual report of the Windhoek Chamber of Commerce for 1912 states that, contrary to former pessimistic views, the year's development and exploration work at the Tsumeb mine has definitely proved the continuance of the ore-body in depth, and sufficient ore reserves for a number of years to come have been opened up. The copper outcrops in the Otavi valley have been worked on a small scale only. They are to be thoroughly examined before deep level mining is started. The payability of the Khan mine appears to have been definitely proved, and preparations for the erection of a reduction plant are now being made. Some prospecting for copper has been carried out in the midlands, but no palpable results have been obtained. The main interest in mining circles is concentrated upon the tin areas south and north of the Erongo. It is mainly English companies who are engaged in prospecting work there. Some of the properties appear to have fair prospects, but until exploratory work on a large scale has proved the continuance of the ore body in depth no reliable opinion can be formed. The prospecting operations on the tin and wolfram areas of the South African Territories, Ltd., have, so far, given good results, but lack finality. A gold occurrence near Kunjas, discovered during the year, is stated to offer good prospects.

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How the Union Farmer is Protected.

South African farmers received £3,899,828 from wool in 1911 and £4,780,594 in 1912, an increase of close on one million pounds. Wool is not taxed in any way. Sheepskins went up £150,000, goatskins nearly £30,000. Neither is taxed, and most of this produce is carried over lines run at a loss because the charges for freight are too low. Ostrich feathers brought in £2,609,638 in 1912 to the needy Cape farmer, as against £2,253,140 in 1911. Ostrich feathers are not taxed. Maize increased by £49,412, and oats by £31,028. The total of the agricultural and pastoral products was £11,194,506, an advance of £1,902,792 over the products of 1911. None of these are taxed. The *East Rand Express*, commenting on these figures, says:—On the other hand, every ounce of gold raised from a mine is taxed, and the mines pay out a very big share in wages and support a large population. The labour of the farmers is as a rule native labour. Native labour on a farm through the rest of South Africa is not taxed, but should a mine or industrial enterprise or even a private citizen on the Rand employ a native he has to pay heavy taxation. The Cape Colonist and Natalian gets his goods carried over the railway at less than cost; the Randite has to pay rates which give a profit of nearly 75 per cent. And then they wonder why we are discontented and fail to admire the benefits of a Union which has proved so lucrative to themselves and so disastrous to us.

TOPICS OF THE WEEK.

THE "SUBSISTENCE WAGE" AND THE COLOUR BAR.

Quite the most perplexing of the problems set by the Government before Professor Chapman and his colleagues of the Economic Commission is that referring to the "minimum or subsistence wage" in this country. When it is remembered that the earnings of a carpenter or mason in the Cape Colony average but one-third of those of the same trade on the Rand, it will be seen at once that something more than considerations of mere locality or relative cost of living are in question. In truth, nothing short of the whole colour question is involved in this innocent-looking reference, and we shall not be surprised if some very sensational evidence is forthcoming on the point. Recent public pronouncements by leaders of the industry like Sir Lionel Phillips and the President of the Chamber of Mines, leave little doubt on the nature of some of the views that will be submitted, and our own columns, after the recent strike, first emphasised this warning to the white men of the Rand. In one of his Fabian essays, Mr. G. B. Shaw sagely remarks that when one of the conditions of earning a wage is the keeping of a certain state, subsistence wages may reach a figure to which the term seems ludicrously inappropriate. He instances a fashionable London physician who cannot save out of £1,000 a year, and the post of Lord-Lieutenant of Ireland, which can only be filled by a man who brings considerable private means to the aid of his official salary of £20,000. Something the same may be said of the application of the term to the Rand mine employee; and Professor Chapman will find that the local application of the excellent theories put forward by him in his works is attended by many snares and pitfalls caused by the colour question. Of course, the Commission will have vast accumulations of data to draw upon. As far back as 1897 Mr. Hennen Jennings had much that was forcible and direct to say on the subject before the Transvaal Industrial Commission, and only a year ago the report issued by what was known as the "Cullinan" Commission on Trade and Industries could not entirely evade the issue. "It may be taken as a general rule," said the Majority Report, "that skilled coloured labour is employed in the coastal Provinces, but not to any appreciable extent in the inland Provinces. Much evidence has been led on this question, and amongst the principal solutions offered in connection with this subject was that wages boards should be established which should fix the minimum rate of wage for each industry, based on what would be a fair living wage for a white man in the different centres. The Commission considered, however, that the increased employment of white skilled labour could only be brought about by the greater attention to industrial and technical education." The Majority Report piously added:—"Putting aside for the moment the Asiatic, one has, however, to admit that the native and coloured men are here, that they belong to the country, and that they are valuable assets. They are being educated and trained industrially, and although some witnesses have said that the skilled native and coloured worker is not so efficient as the white man, on the other hand others have affirmed that he is, and not only that, but that he keeps to his employment. Much may be said in favour of both points of view, but the Commission is not satisfied that the native or coloured man is by any means so efficient as the white." Mr. W. A. Martin, however, who, it will be recalled, prepared a more vigorous Minority Report, dealt with the question less timidly. He showed that the record of the past few years was sufficient to prove that there were undoubtedly fewer white people proportionately employed in factories in those parts of the country where the coloured and native people were the furthest advanced in civilisation and industrial ability than was the case a few years ago. "It is impossible," added Mr. Martin, "to go through the factories in the Cape Peninsula without being surprised at the extent to which coloured labour is used. The reason is obvious—it is cheaper—and it is cheaper because of the higher civilisation of the white who demands better conditions of living than will satisfy the aspirations of the coloured man and the native; which better conditions of living are artificially increased in cost by the taxation through customs duties of the necessaries of life such as food, clothing, shelter, etc." Several suggestions were made to that Commission for the protection of the white worker from the competition of the coloured man and the native. The principal suggestion was that the Australian precedent should be adopted, and that wages boards should be established for the various skilled trades throughout the country; that minimum rates of wages should be fixed by these boards based on the cost of the reasonable expenses of living of the white man in each area, and that it should be illegal to employ any skilled worker in that trade, in that locality, at less than the minimum wage thus determined. On this point, Mr. Martin said:—

> In my opinion, whatever may be said in favour of wages boards, it is quite impossible now to adopt them in this country if the standard governing them is to be that of the cost of the white man's living. There are many thousands of coloured men and natives throughout the country, chiefly in the Cape Province, who have progressed in civilisation and have attained habits of industry and skill to the extent necessary to enable them to earn a respectable livelihood as carriage, cart, or wagon makers, saddlers and harness makers, blacksmiths, carpenters, and other skilled trades at rates of pay which, although probably not sufficient to satisfy the larger requirements of the white man, are enough to satisfy them and enable them to live in reasonable comfort. While they are sufficiently skilled to earn as skilled workers the wages necessary for their maintenance on the scale upon which they live, they would not be sufficiently so to earn the minimum rate based on the cost of the white man's living. In the event of the establishment of a wages board on the lines and with the powers suggested, they would therefore immediately lose their employment. I sumbit it is inconceivable that any nation could legislate to deprive such of their livelihood and thrust them back from the scale of civilisation to which they have attained by their own industry to become again hewers of wood and drawers of water. . . . It is difficult to decide whether the rate of pay given to the skilled coloured worker—lower than that of the white—is due to his being less skilful than the white, or merely because of his colour. One witness stated that it was because he "did not need as much as the white man," which obviously cannot be accepted as a sufficient reason. Another witness stated frankly that the white man was paid more than the coloured man for sentimental reasons, solely because of his colour. Whilst another claimed that the difference was justified because of the coloured man's inferior skill and lesser power of application. I do not pretend to decide between these various versions, but the fact remains that, whatever be the reason, the coloured skilled worker is willing and does in fact accept for his labour a much lower rate of pay than his white competitor can, or is willing to take. If his services are cheaper than those of the white man—due regard being had to the relative skill or capacity—it is certain that in the stress of competition, sentimental considerations will not be allowed to decide the matter, but that the coloured worker will in the future increasingly displace the white man, the extent of that displacement being governed solely by the ratio in which the supply of coloured skilled labour is available.

All this is, of course, most interesting and informative, as far as it goes, but it certainly does not tend to make the task before those who have to consider the problem of a "subsistence wage" in this country any the less formidable.

THE WATER BOARD'S NEW SCHEME

Visits of the representatives of the mines and municipalities to the scene of the Rand Water Board's newest activities, and the issue of the detailed final reports dealing therewith have drawn attention to the Board's latest project. It will be remembered that in a comprehensive speech delivered at the special meeting of the Board recently held to consider the matter, Mr. F. D. P. Chaplin traced lucidly the history of the present scheme, and the reports now before us elaborate and marshal very convincingly the arguments in favour of the steps now decided upon by the Board. Thus the experience gained by the Board during the past few years has shown that, from their nature and origin, its present sources are uncertain and unreliable, and are especially so during, and immediately after seasons of drought. In times of normal rainfall these sources are capable of yielding just sufficient water to meet ordinary requirements, when all the machinery at the various pumping stations is running satisfactorily. But even at such times there is little or no margin, and under the law as it stands, there is never likely to be any margin, since the Board is not permitted to pump more than 10 million gallons a day from the dolomite formation. Apart from the consideration of shortage during periods of pressure or emergency, it will be evident that a water system, which under normal conditions is merely sufficient to meet the demands upon it from day to day, is in a very insecure position. Realising, therefore, the limitations of its present supply, the unreliability of the sources from which it is obtained, and the heavy demands that at certain periods are made upon it, and having regard also to the essential importance of a permanent supply in the interests of the public health and the industries of the Witwatersrand, the Board's Standing Committees, early in 1911, instructed the Chief Engineer to investigate the most suitable of the catchment areas within a radius of 50 miles of Johannesburg, with a view to the formulation of an entirely new scheme of supply. After an investigation of about fifteen probable sources, the Chief Engineer submitted the result of his work in a general report issued in April, 1912. For many months following the issue of that report, negotiations were carried on for the purpose of arriving at an agreement between the bodies represented on the Board, as to the terms and conditions under which they would be prepared to co-operate in undertaking and carrying out a new scheme of supply. It was not, however, until about the middle of December, 1912, that something in the nature of a definite understanding was concluded between the interested parties. Those who are fully acquainted with the circumstances recognise that these protracted negotiations were unavoidable, in view of the number and variety of the interests concerned, and the magnitude of the capital expenditure involved. The necessity for a new scheme of supply was generally accepted, and almost the only difficulty which the question presented at any time was the manner in which the Fixed Charges for interest and redemption in respect of the fresh capital required, should be apportioned as between the Mines and Municipalities. Finally it was agreed between the parties, that the incidence of these charges should be divided equally between the Mines and Municipalities; notification to that effect was received by the Board about the middle of December, 1912. A Sub-Committee was appointed, to press forward, as rapidly as possible, the further and more detailed surveys and other work, preliminary to the selection of a particular scheme, and to supervise the drafting of the fresh legislation required. The work which devolved upon the Chief Engineer proved onerous in the extreme, and before a definite decision could be arrived at the Session of the Union Parliament then current, had advanced so far, that the introduction of the proposed legislation had to be postponed until the next meeting of the Legislature, which will probably begin early in 1914. Although this delay was regrettable in view of the urgent necessity of providing an additional permanent supply at the eariest possible date, it gave an opportunity of inquiring more thoroughly into the most suitable of the schemes previously considered; and this further investigation has not been without advantage. It appeared, from the many very careful and prolonged investigations made, that the direct pumping scheme which could be carried out and worked at the lowest cost, and which would be unobjectionable from the engineering standpoint, is that known as the Lindequees Falls scheme. Mr. Burt Andrews, who was called in consultation with the Board's Chief Engineer, also favoured this scheme. The dam site is situated about 26 miles below Vereeniging, and some 15 miles in a direct line above the small town of Parys. The impounding structure which it would be necessary to erect is a barrage, which is not only cheaper than a masonry dam, but has, in the opinion of the Chief Engineer, the additional and important advantage of being more suitable for controlling the heavy floods which sometimes occur on the Vaal River. Contrary to the usual practice in such matters, it would be necessary to pump from the upper instead of from the barrage end of the reservoir. This would not be attended, however, with any risk or difficulty, as it appears from the Engineer's Report that the fall in the level of the reservoir between Vereeniging (where the pumping station would be situated), and the barrage at Lindequees, is comparatively small, being only about eight feet over the whole distance of 26 miles. In fixing the height of the proposed barrage required to store the quantity of water, the Chief Engineer took into account, for the purposes of his estimates, the quantity of water impounded at the head of the reservoir at Lindequees, which would fall below the level of the suction of the pumps at Vereeniging, and which would not, therefore, be available for use in any circumstances. Another objection urged against this scheme was that there would be some risk of flooding the Victoria Falls Power Company's Works at Vereeniging in times of flood. The Engineer is satisfied, however, that by opening the gates of the barrage, the waters of the heaviest flood would be allowed to take their natural course without any interruption of their flow at, or in the proximity of the barrage site. This being so, the Power Company's Works would be in no greater danger after the erection of the Board's impounding works than they are at present. Apart from these considerations, the Lindequees scheme has many satisfactory features in which the other sites on the Vaal River referred to are deficient. Among these may be mentioned the great catchment area, which is 17,199 square miles; and the advantage of being able to pump direct from Vereeniging, which is almost the nearest point of the Vaal River to the Rand, and where coal is abundant and cheap. In considering the financial aspect of the proposed new scheme, the Sub-Committee were strongly of opinion that the Railway Administration should co-operate with the Mines and Municipalities in the provision of such a scheme, and should pay an equitable share of the Fixed Charges in respect of the current Loan and of that to be raised. After some negotiations with the Railway Board, it was agreed that the Administration should be admitted as a Constituent Authority; that it should contribute 7½ per cent. of the Fixed Charges on the existing Loan and on that to be raised to carry out the new scheme of supply; that it should have the right to appoint one representative on the Board; and that when the first instalment from the new scheme is in service, it should be entitled to draw from the Board the full amount of its water requirements up to the extent of about a million gallons a day. Naturally the scheme has been subjected to criticism in some quarters, especially so in a letter to "The Friend" from the pen of Mr. G. Baumann, of Bloemfontein, who looks on the proposal with much suspicion in respect of its monopolising land suitable for future irrigation, and foreshadowing opposition by Transvaal and Orange Free State farmers. Again, Kimberley critics, who, of course, are not disinterested, say that there is another point requiring serious attention, viz., the non-interference with the normal flow of the Vaal River, which may be taken as fully equal in importance to the question raised by Mr. Baumann. These and other objections will doubtless all be met and overcome in a sympathetic spirit, and the Board's sound and far sighted scheme brought with as little delay as possible to fruition.

RAND PROFITS IN SEPTEMBER.

Excellent Showing Despite Labour Scarcity and a Short Month—Group Returns Analysed.

ELSEWHERE in this issue we reproduce our usual monthly table of "group" returns for September. The prevailing scarcity of native labour affected the profits of most of the "groups" last month, and this, coupled with the fact that September was a thirty-day-month, whereas August had thirty-one working days, has resulted in a large number of declines.

GROUP AGGREGATES.

At the moment of writing, figures for the Randfontein Central and Langlaagte Estate of the Robinson Group are not to hand, but the aggregate profits of the other groups are as follows in the two months:—

	September.	August.
Rand Mines	£218,699	£244,835
Central Mining	222,619	220,944
Cons. Gold Fields ...	88,843	95,037
Barnato	99,144	89,549
Albu	63,199	66,284
Neumann	65,242	60,767
E.R.P.M.	83,460	82,513
Cons. Mines Selection	20,202	21,768
Anglo-French ...	23,139	24,238
Goerz	11,127	7,164

Considering the labour position and the short month, these results must be deemed very satisfactory and as constituting further testimony to the very strong intrinsic positions of the majority of the Witwatersrand's mines.

CORNER HOUSE MINES.

Of the "Eckstein" companies in the Rand Mines group, the Crown Mines records the largest decline, the profit for September being £115,100 as compared with £128,654 in August. Examination of the figures discloses the fact that 16,000 tons less were milled at an expenditure of 4d. per ton more. Another proposition which has severely felt the shortage of native labour is the Bantjes, where the profit at £1,046 is less than half the amount earned in respect of the August operations. Working costs were reduced at this mine during the month, but both the tonnage milled and the output witness considerable contraction. An excellent return is recorded by the Modder B. mine, which with 80 stamps and five tube mills at work crushed more ore and earned a considerably larger profit than did the neighbouring mine, the New Modderfontein, which had 180 stamps and 7 tube mills running. In connection with this latter property it should be realised that the shortage of native labour there is very acute indeed. The Modder B's costs were 15s. 9d. per ton. The lowest working expenses of the Corner House group are those recorded by the Robinson, which mined and milled 52,100 tons at a cost of 14s. 5d. per ton.

The City Deep, it is satisfactory to note, earned a profit of £21,490, as compared with £20,439 in August, whilst the Village Deep, despite higher working expenditure, improved its profit from £13,789 to £17,037.

THE GOLD FIELDS GROUP.

On the Consolidated Gold Fields subsidiaries scarcity of native labour was severely felt during September. The Simmer and Jack's profit, which was £35,442 for August, was £30,069 in September, whilst the Robinson Deep's earning was reduced from £32,392 to £28,001. At this property there was a breakdown at No. 1 shaft during the month. The Knights Deep profit, however, was £16,189, as compared with £12,098 in the preceding month, and the results do not include 740 ozs. of gold from dismantled plates, the proceeds of which have been earmarked for additions to plant. The Jupiter, which is closing down, earned £8,810, a profit which is abnormal owing to practically no new ore being broken and no development done.

BARNATO MINES ADVANCE.

The Barnato Group, which has been steadily increasing its profits for months past, earned £99,114 in profit, £10,000 more than in September, thanks largely to the excellent showing of the new producer of the group (the Van Ryn Deep, which made £19,782). The aggregate total was further assisted by an improvement of over £2,000 in the Consolidated Langlaagte's earning, and the maintenance of excellent returns at the Knights.

E.R.P.M. AND OTHER MINES.

The East Rand Proprietary, including a profit of £6,566 derived from the treatment of accumulated slime, earned £83,460, which is about £1,000 better than the August total, whilst Brakpan, with costs at 19s., earned about £1,500 less. Amongst Albu Mines, the Van Ryn, where some remarkably rich ore is being opened up, further improved its profit to over £23,000. The West Rand Consolidated's profit, despite a decline in working expenditure, was £2,000 less.

Neumann Mines make a very good showing, four of the five producing subsidiaries—the Wit Deep, Wolhuter, Consolidated Main Reef, and Knights Central recording improvements, whilst in regard to the Georz group the much improved returns of Geduld, where new plant has recently been started up, may be specially noted. The New Kleinfontein earned a profit of £23,139, and it is evident that this fine old proposition has got into its stride again after several months of hampered work. Taken altogether, the September results, considering the short month and the scarcity of native labour, must be adjudged satisfactory in the extreme, and that they augur well for a ready response to any improvement in the native labour position is unquestionable.

Kolmanskop Diamonds.

The output of diamonds from the Kolmanskop property at Luderitzbucht for the month of September was 8,009 carats. The low production is accounted for by a shortage of labour and heavy rains.

Pniel Diamonds.

The Pniel Estate is now thrown open to diggers, who are commencing to arrive. Large numbers were at work within three months. All arrangements have been made for an adequate water supply. The Pniel Estate, in which the South African Diamond Corporation has now the controlling interest, is situate adjoining the property of the New Vaal River Company. It has a frontage of 25 miles to the Vaal River, and an area of 80 square miles.

Myrtleford G.M. Co.

Tenders are invited for the purchase of certain 25 prospecting claims on the farm Witpoortje No. 44, six prospecting claims on the farm Luipaardsvlei No. 8, and 42 diggers' claims on the farm Witpoortje, certain stands and waterrights, all in the mining district of Krugersdorp. The mine was recently worked by the Champ d'Or Gold Mining Company, Limited, and is fully equipped with a 60-stamp battery, cyanide and slimes plant, and all the necessary appliances for an up-to-date mine, so that operations can be commenced without any delay.

The Rex mine, in the Sabie district, is to be reopened, and the battery restarted this month, under the management of Mr. Long.

It is rumoured that a rich tin strike has been made on the farm Plaatdoorns (Olifants ward), Northern Transvaal.

TRANSVAAL COLLIERIES AND TRUCK SHORTAGE.

What One Typical Mine Loses per Month—Significant Figures.

WE have obtained from Mr. E. M. Goodwin, general manager of the Middelburg Steam Coal and Coke Company, Ltd., a statement showing the number of hours and tonnage lost at his colliery for the twelve months ended August 31st last, solely on account of the scarcity of railway trucks. It is as follows:—

	Hours lost.
1912.	
September	21¾
October	45
November	17¼
December	28¼
1913.	
January	25½
February	13¼
March	26
April	35¾
May	18½
June	11
July	64½
August	40½
Total	347½

This is a loss of practically 29 hours per month, and a loss in output at 100 tons per hour or 2,900 tons per month, or 34,800 tons per annum. Now, probably the output of Witbank Colliery is three times that of the Middelburg Steam Coal and Coke Company. What, then, must be that company's annual loss through shortage of trucks, putting the profit on the coal at the low figure of, say, two shillings per ton? And were we able to secure from the managers of Witbank, Coronation, Landau, Anglo-French, Premier, Outspan, Tavistock, Vaalbank, Uitkyk and other collieries similar returns to that supplied by Mr. Goodwin, it would surely be an eye-opener for the Railway Administration themselves and a bitter regret to those who at present bear so heavy a burden of taxation in this much-taxed country. And to think that this taxation might be immensely reduced if only the coal mines could be supplied by the railway authorities with sufficient numbers of trucks! The coal owners are only too willing to bear the burden of taxation by way of paying railway rates on carriage of coal, but are not allowed to do so, just because the Railway Administration cannot, or will not, supply the necessary trucks. Then another thing one has to remember is the fact that Mr. Goodwin's statement does not by any means represent the full loss to coal owners, for, in addition to the loss caused by the scarcity of trucks, it must be taken into consideration that very frequently the types of trucks required for the smaller classes of coal are not available, consequently, in order to keep the miners going when other types of trucks are available for round coal, duff, nuts and peas have to be relegated to the dump, in spite of the fact that there is a ready market for the smaller classes of coal. As the *Middleburg Observer* points out: "Consider the fearful loss of time and waste of labour involved in loading trucks quite unsuitable for the reception and conveyance of coal—cattle trucks and the like, the coal having to be shot in through windows and doors. It must also be borne in mind that certain classes of trucks must be consigned to certain places. For instance, "hoppers" may not be despatched east, but only to the gold mines. It would be a good thing, and an eye-opener to the public, if monthly statements were published in the papers showing the shortage in the truck supply, the consequent loss of revenue to the collieries, and, above all, the loss of revenue to the country."

JUPITER GOLD MINING COMPANY, LIMITED.

Operations Suspended—Reasons for Closing Down.

As was announced in our issue of September 27th, the directors of the Jupiter Gold Mining Company have decided to suspend operations at the mine. A circular has been issued, which sets forth very fully the reasons for deciding on this step. The document states:—

At the last annual meeting of shareholders, held on the 28th March, the Chairman pointed out that, owing to the very large percentage of low grade ore opened up in the mine, it was considered the wisest course to make every preparation to put the Company into a position to deal profitably with ore of a mine grade of 4.1 dwts., and to that end the question of increasing the reduction plant to a capacity of 60,000 tons per month was being considered. The Board having decided to carry out this scheme, the necessary financial arrangements were made whereby the Company would be enabled to borrow up to £50,000. This loan, together with the cash in hand and the profits it was estimated would be made meanwhile by somewhat overcrowding the crushing capacity of the existing plant, was deemed to be sufficient to justify the programme being proceeded with. Tenders for the supply of the plant were called for, and actually accepted, when the labour troubles in July broke out. In view of the unsettled conditions following on the strike, and the certainty of shortage of native labour caused thereby continuing for some time to come, the Board did not feel justified in proceeding with the scheme, the financing of which was contingent on the assumption that profits would continue to be made in the meantime, while its success was also dependent on the reduction of working costs anticipated as the result of the enlarged scale of operations. The following alternative policies were then given serious consideration:—(1) To continue milling—necessarily on a much reduced scale—in the attempt to improve the yield by extracting ore only from the richest blocks in the mine. The profit result of such ultra-selective mining, however, was not considered sufficiently attractive to justify the adoption of a policy which would inevitably have resulted in depleting the reserves in a comparatively short time of the bulk of the best ore, and would have reduced the remainder to an average value little, if at all, above pay limit. (2) To temporarily suspend milling operations and absorb all available funds for the purpose of proceeding with shaft-sinking and development in order to exploit the lower areas. This policy also did not commend itself to the Board in that, failing the facilities for crushing on the contemplated larger scale, the payable tonnage to be opened up would have to be of a considerably higher value that 4.1 dwts. Even if development work and shaft-sinking were practically confined to the richer (Howard) section of the mine with a view to concentrating stoping, when resumed, on that section, the funds in hand would not be sufficient by a long way to place the mine in a satisfactory position for resuming milling operations on a scale of not less than 40,000 tons per month. On the other hand, money spent in development work in the Catlin section, with the idea of that section contributing a fair proportion to the ore to be sent to the mill, would in all probability be productive of a smaller pay tonnage per foot advanced than that expected from the Howard section. The shortage of native labour is the more severely felt on this mine owing to the peculiar condition of the hanging wall in the eastern section of the mine, which has for some time made it inadvisable to make use of machines to any extent. The narrow margin of profit—averaging 1s. 11d. per ton for the six months ending 30th June—necessitates the mine and plant being worked to their full capacity, in order to ensure, as far as possible, profitable results. The tonnage which can be produced under the conditions obtaining at present is totally inadequate, and crushing on a much reduced scale could only result in working costs which would tender the extraction of ore of the average value of the reserves unprofitable. After mature deliberation, the Board has come to the conclusion:—(1) That continuance of milling operations is impracticable under present conditions; (2) That the liquid cash in hand, amounting to about £45,000, plus such moneys as could be raised by gradual realisation of other investments, is not sufficient to place the mine in a sound position to re-start work on a basis of 60,000 tons per month; (3) That in order to open up both sections of the mine to such an extent as to either feed the mill at the rate of 60,000 tons per month (for which purpose the plant would have to be extended), or, failing an adequate supply of native labour, to be in a position to crush a smaller tonnage of ore of higher value from the richer (Howard) section only, an expenditure of not less than £150.000 would have to be faced. In the circumstances, the Board has decided that it is in the best interest of shareholders to suspend all work and to conserve the Company's cash resources until an opportunity presents itself to place the mine in a permanently satisfactory position. Considering the large unexploited area of the mine, it is felt that the only way of doing it justice is by the provision of such funds as will allow of a very large payable tonnage being developed in advance of the mill requirements. More settled conditions, especially in regard to native labour, than those obtaining at present are essential for a successful attempt to ensure profitable results for some years ahead. The profits for August and September were abnormal, as practically no new rock was broken, and the mill was supplied almost entirely with ore and sweepings which had accumulated in the mine. This, coupled with the fact that practically no development was done, explains the abnormal results.

MANAGER AND STAFF OF THE DURBAN ROODEPOORT G.M. CO., LTD.

Top Row (reading from left to right).—A. McMurdo (shift boss), G. Blair (foreman carpenter), J. Dowdeswell (clerk), A. G. Cochran (acting accountant), J. F. Hobbes (sampler), C. McAlpine (shift boss), M. Morrison (foreman blacksmith).

Middle Row.—S. Penny (native hospital attendant), W. H. [illegible] (assistant compound manager), J. Gartrell (shift boss), J. Pretorius, G. Wood (compound manager), J. E. Fraser (head timekeeper), J. Ingram (assayer), J. [illegible] ([illegible] attendant).

Bottom Row.—C. H. Gibbons (acting resident secretary), J. W. Duncan (engineer), F. G. Macdonald (cyanide manager), H. Shaw (mine captain), Arnold S. Milne (general manager), H. Corndy (battery manager), A. Davey (storekeeper), B. Tatham (electrician), H. A. Macdonald (surveyor).

***Photo by** Olliver, 98, Pritchard Street*

DE DEERS' REPORT ANOTHER EXCELLENT YEAR.

Revenue Shows Increase of £831,894— Diamonds Sold to Value of £6,297,782.

The report of the directors of De Beers Consolidated Mines, Ltd., for the twelve months ended 30th June, 1913, to be submitted to the shareholders at the twenty-fifth ordinary general meeting to be held on 25th November, 1913, shows: The balance brought forward from 30th June, 1912, was £1,042,399 6s. 9d., out of which the following had to be provided:—Bonus of 2s. 6d. per share on deferred shares declared out of profit for the year ended 30th June, 1912, £125,000; British income tax from 5th April, 1908, to 5th April, 1912, £110,010 10s. 5d. During the year the diamonds sold, plus the increase of stocks taken at cost, amounted to £6,297,782 0s. 10d.; add to this the following: Dividends on investments, £122,239 0s. 4d.; nett revenue from house and stand rents, £10,715 12s. 8d.; revenue from other sources, £10,113 11s. 6d.; making a total of £7,248,239 1s. 8d. Less expenditure as follows:—Mining and other expenditure, £2,080,622 3s. 7d.; depreciation, £706,035 12s. 8d.; interest on company's 4½ per cent. South African Exploration Debentures, and on capital of leased companies, £169,989 15s. 6d.; sinking fund to provide for the repayment of the 4½ per cent. South African Exploration Debentures, £65,942 12s. 0d.; mining profits tax, Union of South Africa, £426,465 7s. 10d.; leaving a balance of £3,799,183 10s. 1d., which has been dealt with as follows:—Suspense profit, diamonds unsold, at cost, £595,601 9s. 5d.; transferred to credit of general reserve fund, £140,060 1s. 11d.; dividends and bonus declared out of the year's profit as follows:—Preference shareholders, £800,000; deferred shareholders, dividends, £1,500,000; bonus, £250,000; total, £3,285,661 11s. 4d.; which leaves a balance to be carried forward to next year of £513,521 18s. 9d. The results of the year's workings have been as follows:—Average yield per load for De Beers and Kimberley mines, ·29 of a carat; average value per carat, 67/3·74; average value per load, 19/6·24. Average yield per load for Wesselton mine, ·27 of a carat; average value per carat, 51/2·88; average value per load, 13/10·02. Average yield per load for Bultfontein mine, ·42 of a carat; average value per carat, 45/9·29; average value per load, 19/2·70. Average yield per load for Dutoitspan mine, ·23 of a carat; average value per carat (based on blue and mixed crusher diamonds sold), 93/0·45; average value per load, 21/4·78. The stock of blue ground and lumps on the floors at 30th June, 1913, was as under:—De Beers mine, 124,211 loads; Wesselton mine, 3,160,468 loads; Bultfontein mine, 2,920,311 loads; Dutoitspan mine, 4,598,064 loads; total, 10,803,054 loads. The revenue from diamonds has increased £831,894 as compared with the previous annual report. The results of the year's operations has been most satisfactory, and the directors felt justified in declaring two interim dividends in September and December, 1912, of 7s. 6d. per share each to deferred shareholders, and a final dividend in June, 1913, of 15s. per share, together with a bonus of 5s. per share, making in all 35s. per share for the financial year on deferred shares. The fixed dividend of 20s. per share was also paid to Preference shareholders. The directors have also made a very substantial increase in the permanent reserve fund, which now stands at £1,800,000. The reserve consists of consols and other first-class securities. £67,068 12s. has also been set aside this year towards the fund to redeem the De Beers South African Exploration Debentures. This fund now stands at £132,184, and is also represented by first-class securities. The blue ground reserve of £2,268,266 8s. 1d. remains intact. Of this amount £1,540,419 is represented by blue ground stocks on the floors, and the balance, £727,847 8s. 1d., is merged in the permanent reserve. The profit and loss account shows an amount of £706,035 12s. 8d. written off to depreciation. This has been applied in the reduction of claims, £270,000; offices, compounds and stand property, etc., £56,728 8s. 5d.; and mining investment values, £379,307 4s. 3d. The amount set aside to meet the profits tax payable to the Union Government for the year ended 30th June, 1913, as shown in the profit and loss account is £426,465 7s. 10d., as against £347,564 3s. 8d. paid last year. Shareholders were informed last year of the representations which were made to the company to convert registered deferred shares to bearer shares. Encouraged by the success of this conversion, the directors decided in February last to extend the operation to preference shares, which has been equally successful, the company offering to make the exchange free of expense in respect of all certificates deposited to prior 31st March, 1913. The Cape Explosive Works, Ltd., in which your company owns all the shares, has continued its operations successfully during the past year, and has increased its production to 436,055 cases of explosives, and its sales were 423,679 cases. With reference to the remarks by the chairman in his speech at the last annual meeting regarding the purchase of the Voorspoed Diamond mine, the directors now beg to report that transfer of that company's property was only effected on 7th July last, and therefore the cost of acquisition can only appear in next year's accounts.

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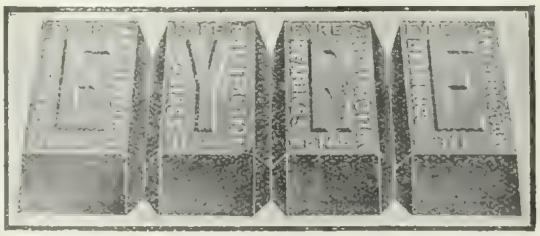

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REEF CONDITIONS ON THE EASTERN WITWATERSRAND.

The "Break" Between Boksburg and Benoni—An Attempt to Prove an Important Theory.

Of the numerous geological problems of the Witwatersrand few have engaged more attention than that which concerns the region lying between the East Rand Proprietary Mines and the New Kleinfontein. It is perhaps hardly necessary to state that the formation here has hitherto been regarded as very much broken and that the identity of the strata in the eastern section of the East Rand Proprietary Mines (in the Cason mine) and the strata in the Van Ryn, Kleinfontein, and Modderfontein mines has been a bone of contention of many years standing. Whilst the majority of geologists are agreed that the auriferous conglomerates of the East Rand Proprietary may be correlated with the reefs worked in the New Kleinfontein and the mines situated to the east of that property the sequence of the formations is obscured by the overlying Karroo beds to the east of the township of Boksburg and the very broken and dislocated nature of the lower Witwatersrand beds as disclosed in shafts and boreholes in the New Boksburg Mines, the Apex and Benoni Mines. Reference to any map of the Eastern Rand will show that boring operations on the farm Rietfontein have been very extensively conducted in the past and but a casual inspection will suffice to indicate that on the ground of the New Boksburg Gold Mines and the Apex Mines the reefs do not occur with the remarkable uniformity and continuity so characteristic of the Central Rand. Numerous theories have been advanced to account for this large hiatus in the stratigraphy of the Witwatersrand formation as, too, have various methods of reasoning been applied to the problem with a view to establishing the Van Ryn-Modderfontein series in settled country and its true horizon between the East Rand Proprietary and the New Kleinfontein. Especial interest attaches itself to the matter at the present on account of an effort to prove the existence of this missing link in the chain of the gold-bearing conglomerates on a block of claims situated immediately to the south of the township of Benoni. These claims—246 in number, registered in the name of Mr. J. H. Humphreys—are bounded on the east by the property of the Benoni Consolidated Mines and on the south by the Apex Gold Mines. The argument upon which this scheme of exploitation is based is briefly as follows:—

Immediately to the west of Benoni station a large belt of red shale outcrops. This bed is over 500 feet in thickness and forms with the overlying sandstones a very prominent geological marker. The strike of the shales and the accompanying sandstones is, roughly, north-east—south-west. The contact of the shales with the sandstones is characteristic. It is a coarse grit with crystalline quartz enclosures and preserves an even strike course from a point half-way between Benoni and the Cason mine (where the formation swings around to the north), right up almost to the Eastern boundary of the Van Ryn Gold Mine Estates. At a point to the north of the main shaft of the New Kleinfontein Company measurement has been taken from this contact to the shaft in question and the distance is approximately 2,100 feet. Hereabouts there are distinct evidences of a break in the formation which follows a line of depression running, roughly, north by south just outside the Van Ryn boundary, but which appears to swing around to the south-east in the neighbourhood of the Kleinfontein dam. It is difficult to say what the exact dynamic effect of this dyke has been, but it would appear that the dislocation produced by it has tended to squeeze the strata around to the south and to deflect the normal line of strike from the north-east and south-west to a line more closely approaching north and south and at a relatively high angle of dip until the influence of this break becomes negligible in the Van Ryn and the eastern section of the New Kleinfontein. On the western side of the Kleinfontein Mine and close to the dam wall, it is reported a reef body was exposed in a cutting, but as this is now full of water the statement cannot at present be corroborated, but quartzites bearing a strong resemblance to the Main Reef quartzites are clearly exposed in their true position. Right in the township of Benoni the characteristic contact of Northern quartz and shale, which is north of the New Kleinfontein shaft, is easily traceable, notably at the corner of Park Street and Elston Avenue. From this point a distance of 2,375 feet has been measured in a due south line and a diamond drill situated on the block of 246 claims aforementioned has been located. The drill has penetrated to a depth of 276 feet and the last core drawn discloses a hard, dense, fine-grained quartzite, the dip of the formation being relatively high—between 60 and 70 degrees. The site of the drill has been selected on the reasoning that since the distance from the shale sandstone contact to the Kleinfontein main shaft is 2,100 feet, at a similar distance from the contact in Benoni township the sub-outcrop of the Kleinfontein (Main Reef series) should be encountered. The drill has been located somewhat further south than this and it has been calculated that if the premises on which the argument are based are correct the Kleinfontein Reef should be intersected within the next 100 feet of sinking. This reasoning pre-supposes that the thicknesses of strata are the same and the distance from contact to reef are the same at (a) the Kleinfontein main shaft, and (b) the borehole. As already stated, it is difficult to determine the effect of the break to the east of the Van Ryn and to estimate in terms of simple measurement the lateral displacement, if material lateral displacement there be, that it has occasioned in the strata. But having regard to the persistence of this contact marker there would appear to be sound reason for assuming that in the block of 246 claims there will be located a section of lower Witwatersrand formation existing under undisturbed and settled stratigraphical conditions. The quartzite disclosed in the core may be considered as typical of normal quartzite overlying the Main Reef series, and there are apparently sound reasons for hoping that in this block of ground the Main Reef series will be located. One is encouraged in this belief by the broken nature of the formation in the Apex and Benoni Mines which inclines one to the view that in these properties the reefs do not exist in their true positions and that in all probability the conglomerate beds found in these mines are dislocated and fractured portions. It is difficult to believe that between Boksburg and Benoni the gold-bearing beds of the lower Witwatersrand formation which are worked to the west of the former and to the east of the latter township are wholly absent and that they have been eliminated from the intervening country, especially so as the underlying markers of the Main Reef Series are present. For all these reasons there accordingly appear to be strong grounds for supposing that the continuation of the diamond drill on the claims south of Benoni will result in at least a partial solution of a problem that has puzzled geologists for many years past.

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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Third Annual Mining Exhibition.

PRELIMINARY ANNOUNCEMENT.

To the Editor, *South African Mining Journal.*

Sir,—I am directed to advise you that the third annual mining exhibition, under the auspices of the Chemical, Metallurgical and Mining Society of South Africa, will be held in Johannesburg during the month of April, 1914, when it will remain open for about two weeks. The scope of the exhibition will be on much the same lines as in previous years, i.e., chemical, metallurgical and mining apparatus and devices for laboratories, works and mines; models, working or otherwise, of apparatus for similar purposes; plans, diagrams, etc., of mines, works, plants, machinery and apparatus; safety and rescue and other ambulance apparatus and appliances, and specimens of crude and manufactured mineral or other natural products of South Africa. The exhibition is primarily for the benefit and information of those engaged and interested in mining work, and to give those in search of mineral products an opportunity of ascertaining where these products may be obtained. No charge will be made for the exhibition of natural products by farmers or bona fide prospectors, or for models or apparatus exhibited by mine employees or small inventors. Commercial firms, for whom a limited space will be provided, desirous of exhibiting machinery, apparatus, natural products, etc., will be charged for the space occupied at from 5s. to 10s. per square foot, according to position, and whether stands are provided or not. Those desirous of engaging space provisionally are requested to specify their requirements with the least possible delay to the undersigned. The usual arrangements for exhibitions, with regard to Customs duties and railway rates, will be made. The two previous exhibitions have been visited by something like 30,000 persons, admission has been free, and no financial gain has accrued to the Society, which has organised the exhibition solely for the purpose of bringing to the notice of those engaged in the mining industry the latest developments in everything likely to be used on or in the mines of South Africa. I am desired to ask you to be good enough to give this announcement the fullest publicity in order that the small inventor or those desiring to exhibit natural products, together with oversea commercial firms, may have sufficient time to prepare their exhibits.—Yours, etc.,

FRED ROWLAND, Secretary.

S.A. School of Mines & Technology Building,
Eloff Street, Johannesburg,
2nd October, 1913.

Ventilation of the Mines of the Rand.

To the Editor, *South African Mining Journal.*

Sir,—*Re* Mr. W. Lacey's letter in your issue of the 4th inst., I beg to inform Mr. Lacey that I am unable to answer any questions or reply to any criticisms that may appear in any public journal until after the discussion on my paper, which will take place before the Chemical, Metallurgical and Mining Society. Kindly allow me, through your journal, to thank Mr. Lacey for his letter, to which and also to any others I shall be very pleased to reply after the said discussion has taken place.—Yours, etc.,

G. H. BLENKINSOP.

Johannesburg, October 8.

A Sheriff's sale was held at the Sutherland Reef Proprietary Mine, Leydsdorp last week, by the Deputy-Sheriff, Mr. T. Kleinenberg, in the matter of W. H. Webb v. Sutherland Reef Proprietary Mine Gold Mining Company, Limited, in liquidation. The first lot offered was thirty-two thousand tons, approximately, of leachable sands, the estimated value of which was four pennyweights to the ton, and this realised £1,350, Mr. D. M. Munro being the purchaser. The amount was sufficient to satisfy the claim, and the plant, etc., was left intact. Some three or four years ago an offer of £5,000 was made for the same dump and refused. Similar work is about to be commenced in the Letaba area.

South African Stocks.

HIGHEST AND LOWEST PRICES FOR THE CURRENT YEAR.

Our usual weekly sharemarket list appears elsewhere in this issue, and the only general comment to be made on it is that dealings have been restricted, and that, apart from minor fluctuation in the price of Government Areas (Modderfontein State Mines), the week on the Stock Exchange has been singularly lifeless. In view of the more tranquil atmosphere in regard to white labour, and the fact that natives are now coming in to the mines in slightly larger numbers, Rand stocks generally exhibit a hardening tendency, and it should at this juncture be of interest to note the highest and lowest prices of the current year, and also the making-up prices in London in mail week. The following list states for certain typical Rand Gold Mining Stocks, for Diamond and Financial Companies, and for some selected Rhodesia propositions, the highest and lowest prices for the current year, and the London "make-up" prices on September 8th last.

	1913. To Date. Highest	1913. To Date. Lowest	M.U. Price Sept. 8
Brakpan	$4\frac{11}{16}$	58/3	$2\frac{15}{16}$
City Deep	$3\frac{11}{16}$	$2\frac{1}{4}$	$2\frac{3}{4}$
Consolidated Langlaagte... ...	$1\frac{9}{16}$	$1\frac{1}{16}$	$1\frac{1}{4}$
Crown Mines (10s.)	$7\frac{3}{4}$	$6\frac{3}{8}$	$6\frac{11}{16}$
East Rand	$3\frac{1}{16}$	$2\frac{3}{16}$	$2\frac{11}{32}$
Langlaagte Estate	$1\frac{13}{16}$	1	$1\frac{1}{8}$
Meyer and Charlton	$5\frac{3}{4}$	$4\frac{1}{2}$	$4\frac{7}{8}$
Modderfontein (£4)	$13\frac{13}{16}$	$10\frac{13}{16}$	$11\frac{5}{16}$
,, "B"	$4\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{13}{16}$
Randfontein Central	$1\frac{1}{2}$	23/0	$1\frac{1}{4}$
Robinson Deep	$2\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$
Roodepoort United	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{9}{32}$
Village Deep	$2\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{31}{32}$
De Beers (£2 10s.)	$22\frac{1}{16}$	$20\frac{1}{4}$	$20\frac{13}{16}$
Jagersfontein	$7\frac{3}{4}$	$6\frac{1}{4}$	$6\frac{1}{2}$
Premier (2s. 6d.)	$9\frac{1}{2}$	$8\frac{1}{4}$	$8\frac{5}{8}$
Central Mining (£12)	$11\frac{1}{8}$	$8\frac{1}{4}$	$8\frac{7}{8}$
General Mining	$1\frac{1}{8}$	$\frac{9}{16}$	$\frac{11}{16}$
Gold Fields	60/9	$2\frac{1}{16}$	$2\frac{5}{8}$
Johnnies	23/3	17/9	20/0
Rand Mines (5s.)	$7\frac{9}{32}$	$5\frac{7}{8}$	$6\frac{9}{32}$
Randfontein	$1\frac{21}{32}$	$1\frac{3}{16}$	$1\frac{13}{32}$
Chartered...	28/4½	17/3	22/3
Cam & Motor	39/0	25/6	30/0
Eldorado	$1\frac{13}{16}$	$\frac{5}{8}$	$\frac{27}{32}$
Gaika	$1\frac{1}{16}$	$\frac{3}{8}$	$\frac{5}{8}$
Globe	$1\frac{11}{16}$	$1\frac{3}{16}$	$1\frac{3}{16}$
Shamva	$3\frac{1}{2}$	$1\frac{11}{16}$	$2\frac{3}{16}$
Surprise	5/6	1/0	3/3
Willoughby	13/3	6/6	9/9

Rhodesian Section.

LATEST MINING NEWS.

Globe and Phoenix Developments—Activity at Odzi—The Shagari District—Globe and Phoenix Sand Plant—Eldorado Banket—Rhodesia Chamber of Mines—Lonely Reef.

The following cable has recently been sent to London from the Globe and Phoenix mine: "Driving north 19th level is proceeding in very high-grade ore; width about 12 inches. 19th level 3a winze is continuing in high-grade ore." In addition to the foregoing, it is advised that the Globe and Phoenix management at Que-Que have wired the London office as follows: "Vertical shaft have cut a reef 2 inches thick at north-west corner at 1,297 feet, value 3 dwts. over a stoping width; at 1,308 feet value 4 dwts.; at 1,320 feet reef extends across shaft on the north-west side to 10 inches wide, 14 dwts., on the east side 3 inches, 3 dwts.; at 1,326 feet on the west side 13 inches, 39 dwts.; on the east side 30 inches, 16 dwts."

* * * *

In the Odzi district encouraging results are being received on the Monte Carlo, where crushing operations are expected to commence at the beginning of October. The Montezuma is still standing idle, though we understand that if satisfactory terms can be arranged the property would change hands and work be at once recommenced.

* * * *

The outlook in the Shagari district at present is described by a correspondent as not pleasing. The closing down of the Alanzas, Oleander, Turkois, and in all probability the Tea Reef at the end of this month, lends a melancholy appearance to the district. The Cheshire Cat looks none too promising. The Rover is also closing down. Mr. Coker, the owner, is leaving for Australia on a prolonged holiday.

* * * *

Much concern was caused in mail week among Scottish shareholders of the Globe and Phoenix Gold Mining Company by the heavy selling of the shares about that time, when they dropped to as low as 22s. 6d. The fall was in part attributed to the action of one of the Edinburgh banks, which had been turning out pawned stock upon which further margin was not forthcoming, and in part to the issue of an official statement to the effect that the new sands plant which commenced operations last January [illegible] closed down temporarily owing to the results obtained being unsatisfactory. Although its capacity was estimated at some 8,000 or 9,000 tons monthly, nothing like these figures has yet been attained. Trouble is experienced in dealing with the wet material, and with a view to surmounting this difficulty the management have decided to instal ore driers. It is calculated that the alterations will take four or five months to complete.

* * * *

The following is from the report of the Eldorado Banket for the quarter ended June 30:—Ore reserves: Total tonnage developed to date, 58,082 tons (value 16·4 dwts.); broken ore in stopes at March 31, 1913, 16,000 tons (6·0 dwts.); ore developed to March 31, 1913, 48,853 tons (22·1 dwts.); surface ore, March 31, 1913, 9,973 tons (6·0 dwts.); ore in sight at June 30, 1913, 36,767 tons (22·2 dwts.); broken ore in stopes at June 30, 1913, 14,671 tons (6·5 dwts.); surface ore at June 30, 1913, 6,644 tons (6·0 dwts.); ore crushed during period, 22,410 tons (12·17 dwts.). Development has been confined to the following points: No. 8 level, vertical depth, 940 feet; incline depth, 1,060 feet. E/2H parallel winze at 353 feet east of incline shaft has been sunk a further 6 feet, assaying 17·0 dwts. over 58 inches, or 7·8 dwts. with high values reduced, and has connected to E/2H rise from No. 9 level. No. 9 level: Vertical depth, 1,054 feet; incline depth, 1,185 feet. E/31 parallel winze at 745 feet east of incline shaft has been sunk a further 11 feet, assaying 1·1 dwts. over 62 inches; total depth, 120 feet. No. 10 level: Vertical shaft depth, 1,139 feet. The parallel drive has been advanced from 18 feet west to 162 feet east of the vertical shaft, a total distance of 180 feet, assaying 1·7 dwts. over 73 inches. This drive has now connected to E/31 winze, and has been suspended. No. 3 north crosscut from main reef, at 45 feet west of the vertical shaft has advanced 5 feet and connected to the parallel drive. No. 4 north crosscut from parallel reef at 100 feet east of the vertical shaft has been put in for a distance of 25 feet without values. W/1J main winze (previously called E/1J) at 145 feet west of the vertical shaft has been sunk a further 53 feet, assaying 7·2 dwts. over 98 inches, or 6·5 dwts. with high values reduced. Total depth, 87 feet. W/2J parallel winze (previously called E/2J) at 96 feet west of the vertical shaft has been sunk a further 53 feet, assaying 1·4 dwts. over 76 inches. Total depth, 58 feet. In addition to the above, sundry short crosscuts, totalling 34 feet, have been driven through the reef in order to prove it at different points. Milling results: Gold in reserve at June 30, 2,841 ozs. Working costs: total working costs, £24,800 13s. 11d. (per ton milled, £1 2s. 1·500d.); profit, estimated, £30,401 3s. 1d. (per ton milled, £1 7s. 1·580d.); value bullion estimated, £55,201 17s. (per ton milled, £2 9s. 3·180d.).

* * * *

The report of the Executive Committee of the Rhodesia Chamber of Mines for the month of August contains the following:—Receipts during the month amounted to £22 4s., and payments to £111 1s. The balance to credit of current account at 31st August was £33 14s. 2d. £600 was on fixed deposit. The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of June and July, 1913:

	June.		*July.*
Local	13,800	......	14,504
Portuguese territory	5,849	......	6,315
North-Western Rhodesia ...	3,126	......	3,408
North-Eastern Rhodesia ...	4,551	......	4,729
Nyasaland	5,442	......	5,384
Other sources	842	......	922
	33,610	......	35,262

The number of natives employed in July shows a decrease of 1,561 when compared with the corresponding month of 1912. The distribution for the months of May and June was as follows:

	May.		*June.*
Producing gold mines	22,750	......	23,095
Non-producing gold mines .	9,651	......	9,297
Coal and other mines ...	1,284	......	1,218
	33,685	......	33,610

The report of a conference of medical officers and other Government officials on the question of health conditions of mine labourers, with special reference to natives recruited by the Bureau in Northern Rhodesia, has been received by your committee, and their views thereon have been forwarded to the Government. Several useful suggestions with a view to effecting a still further reduction in the mortality on mines were made by the conference, including experiments with vaccine treatment of pneumonia, improved railway accommodation, appointment of assistant compound managers, etc.

* * * *

The report of the Lonely Reef Gold Mining Company states, *inter alia*, for the quarter ended June 30:—Added to reserves during period, 24,157 tons; ore reserves at end of quarter, 184,228 tons; average assay value, 20·05 dwts.; tons milled, 14,596; total yield in ounces of fine gold, 12,635·413; yield in dwts. of fine gold per ton milled, 17·31. The development footage is less than the previous quarter, the reason being that no new level has been opened during the last eight months. The work has been confined, therefore, to the levels opened before that time. The quantity of ore milled during the quarter exceeds that of any previous like period by 3,063 tons, and the gold produced is 1,740 ozs. greater. Driving has been done on the No. 8 level and No. 9 level, and winzes have been sunk below No. 9 level. The ore reserves were increased to 184,238 tons, being an excess over the quantity at time of last report of 9,571 tons. The grade of the ore reserves decreased to 20·05 dwts. per ton. This decrease is due to the tonnage for the quarter brought into ore reserves being of lower grade than usual owing to the drives being in the poorer south end of the ore shoot. The ore developed has been decreased to 150,223 tons. That is due to the fact mentioned when referring to the small development footage, viz., that no new level has been opened during the last eight months. The milling has been very satisfactory in that we crushed 14,596 tons. This quantity should be increased during the curent quarter. The working cost for the quarter shows an appreciable reduction, as compared with that of the previous quarter, being £1 7s. 6·7d., as against £1 11s. 2·8d. These figures include all administration expenses in London and Bulawayo, but not the royalty to the B.S.A. Company, which amounts to almost 3s. 8d. per ton, the total sum paid to that company on this account for the quarter being £2,659 6s. 11d. The water supply has been sufficient for our needs. Additional wells are now being put down to ensure a supply during the coming dry months. The additional five stamps were started during June, and the full 20 stamps are now running in a satisfactory manner.

* * * *

A syndicate has just been formed locally with a capital of £5,000 in 20,000 shares of 5s. each to acquire and work four blocks of claims known as the Solent, Ophir, Troy and Hilda Reefs, all situated in the Shamva and Mazoe districts of Southern Rhodesia. The syndicate is termed the Northern Claims and Developments, Ltd. A number of fabourable reports on the properties have been made by prospectors, who have opened up and exploited the various blocks. The extent of these are: Solent, 60 claims; Ophir, 40 claims; Troy, 10 claims; and Hilda Reefs, 40 claims. The policy of the company at present is to concentrate all development work on the Hilda Reefs property, where the most favourable indications are understood to exist.

CRUSHING PLANTS ON RHODESIAN MINES.

A Variety of Types and Designs in Use—A Promising Field for Inventors.

The varying characteristics of Rhodesian ores in the different mining fields of Matabeleland and Mashonaland have resulted in the employment of very varying reduction and treatment plants on the different mines. With the exception of the battery of Nissen stamps running in the City Deep mill, all the reduction plants of the Witwatersrand are of practically uniform pattern, and consist of ordinary gravitation stamps and tube mills. The stamps are of varying weights in different mills, and there are two or three sizes of tube mills employed; otherwise the reduction plants at work from one end of the Reef to the other are of the same type and design. The Transvaal Chamber of Mines output sheet is thus a very different schedule to that issued by the Rhodesian Chamber of Mines, in so far as details of crushing plant are concerned. The Rhodesian statement, apart from the numerous small "dolly" plants in operation, shows that, in addition to stamps, the following types of crushing plant are in use: Chilian mills, Gates' rolls, Huntingdon mills, grinding pans, pneumatic mills, Eureka crushers and internal rollers. Of the exact type or design of the two last-mentioned equipments, we are unaware, but it should be of considerable interest to record the various types of crushers other than stamps employed at the different mines, either as substitutes for gravitation heads or as supplements to them. The list is as follows:—

Matabeleland.

Agincourt: 5 stamps and 1 grinding pan.
Bushtick: 24 stamps and 3 tube mills.
"C": 10 stamps and 1 Chilian mill.
Carry: 1 Huntingdon mill.
Colleen Bawn: 6 stamps and 1 grinding pan.
Lonely Reef: 20 stamps and 3 tube mills.
Nelly: 2 Huntingdon mills.
Old Nic: 15 stamps and 4 grinding pans.
Winifred: 1 internal roller.
Cinderella: 1 Eureka crusher.
Collingwood: Ball mill.
Gaika: 5 stamps and 1 Chilian mill.
Globe and Phoenix: 40 stamps and 10 grinding pans.
Gothic: 15 stamps and 2 grinding pans.
Red Hill: 1 Chilian mill.
Selukwe Columbia: 1 Chilian mill and 3 grinding pans.
Wanderer: 4 Gates' rolls.

Mashonaland.

Battlefields: 2 Chilian mills.
Brilliant: 7 stamps and 1 grinding pan.
Concession: 5 stamps, 1 Chilian mill and 2 grinding pans.
Dowry: 1 pneumatic mill.
Dreadnought: 1 Chilian mill.
Giant: 30 stamps and 2 tube mills.
Pickstone: 10 stamps and 1 Chilian mill.
Shepherds: 5 stamps and 1 tube mill.
Thistle-Etna: 1 Chilian mill.
Eldorado Banket: 20 stamps, 2 Chilian mills and 8 grinding pans.
Kimberley Mashonaland: 6 stamps and 2 tube mills.
Louise Grand: 1 Huntingdon mill.

It will be evident from the above that there is considerable scope existing in Rhodesia for the various makes of crushing appliances, other than gravitation stamps. Any new type of crushing or fine grinding machinery, provided it does effective and economical work, appears to be assured of a fair trial, and success, once established, is likely to induce other properties to take the device up.

The best "Reef Traveller" is the *South African Mining Journal*.

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THE SEPTEMBER OUTPUT: GROUP RETURNS.

Scarcity of Native Labour the Feature.

Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of September:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep	300	7	54,300	17 8	16,316	£20,249
Geldenhuis Deep.	300	7	47,000	24 9	16,500	10,988
Nourse Mines ...	260	7	45,700	21 11	16,322	18,447
Ferreira Deep ...	245	7	52,400	19/ 5	24,033	50,282
Crown Mines ...	660	26	177,000	15 8	60,494	115,100
Durban. Rood. D.	100	3	21,100	26/ 6	7,546	3,633
Totals & averages	1865	57	397,140	18/10	141,211	£218,699

The following are the results of crushing operations of Central Mining companies for the month of September:—

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton	Total Fine Ozs.	Total Estimated Profit.
Modder B.	80	5	35,500	15/ 9	17,642	£46,105
New Modder	180	7	35,100	19/ 1	17,586	40,285
City Deep	150	9	36,000	25 8	16,194	21,490
Village Deep	180	7	37,900	22 2	14,078	17,037
Village Main R...	220	6	35,600	18/ 3	15,226	30,997
Robinson	250	6	52,100	14/ 5	24,663	65,659
Bantjes	100	3	19,630	23/ 6	5,765	1,046
Totals & averages	1160	43	251,830	19/ 3	111,154	£222,619

The scarcity of native labour is responsible for the decreases in profit where such occur. This especially refers to the New Modderfontein and the Crown Mines.

Bantjes.—The shortage of native labour has rendered it necessary to draw on the dump rock, which, although of low grade, is yielding a profit, but has naturally brought down the average yield of the total tonnage milled.

The Albu Group.

The September operations of the producing mines of the Albu group resulted as follows:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West	80	14,251	£13,521
Meyer and Charlton	75	14,600	13,098
New Goch	120	26,800	21,809
Roodepoort United	50	23,689	20,762
Van Ryn	140	36,560	28,269
West Rand Consolidated ...	100	24,600	26,996
	565	140,500	£124,455

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	18/11·7	£19,279	£5,758
Meyer and Charlton	17/11·3	34,530	21,432
New Goch	16/ 3·3	25,824	4,015
Roodepoort United	17/ 6·3	22,372	1,610
Van Ryn	15/ 5·6	51,294	23,025
West Rand Consolidated ...	21/11·4	34,355	7,359
		£187,654	£63,199

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep ...	46,200	£68,446	£30,709
Wolhuter	29,900	42,896	15,610
Consolidated Main Reef...	21,080	33,710	11,076
Main Reef West	16,390	25,223	5,130
Knight Central	20,640	24,623	2,717
		Total for group	£65,242

Wolhuter.—Increased profit due to abnormal increase in value of stope faces and amalgam obtained from clean-up of tube mill pump.

Barnato Group.

The following are the operations of the Barnato Group for the month of September:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.	Gross Profit including sundry Revenue.
Cons. Langlaagte ...	100	42,500	£58,196	£22,547
Ginsberg	80	15,040	20,906	6,546
Glencairn	160	18,114	14,804	3,252
New Primrose	160	24,200	33,545	18,014
New Rietfontein . .	120	15,200	15,384	1,064
New Unified	60	12,250	15,453	5,163
Quest	35	4,166	3,213	671
Van Ryn Deep	70	31,500	51,086	19,782
Witwatersrand	220	35,320	45,098	22,075
September totals.	1005	198,290	£257,685	£99,114
August totals .	995	219,818	£226,574	£89,545

The monthly gross profits for 1913 are:—January, £79,198; February, £74,114; March, £81,152; April, £82,350; May, £81,949; June, £84,369; July, £59,316; August, £89,545; September, £99,114.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for last month of the undermentioned companies of the Consolidated Gold Fields group:

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	63,000	16,016	£30,069
Robinson Deep	125	8	48,500	16,601	28,001
Knights Deep	400	11	97,900	16,737	16,189
Simmer Deep	180	9	54,300	10,779	3,605
Jupiter	120	6	27,700	6,637	8,810
Sub Nigel	25	1	4,540	2,037	2,169
Totals	1170	42	295,940	68,807	£88,843

The sundry revenue included in the above total declared profits is as under: Simmer and Jack, £2,500; Robinson Deep, £616; Knights Deep, £377; Simmer Deep, £706; Jupiter, 566; Sub Nigel, £389; total, £5,154.

Reserve Gold.—Simmer and Jack, 1,725 ozs.; Robinson Deep, 1,656 ozs.; Simmer Deep, 1,000 ozs.; Jupiter, 850 ozs.; Sub Nigel, 450 ozs.; total, 5,681 ozs.

Scarcity of labour was severely felt on all mines of the Consolidated Gold Fields group during September.

Robinson Deep.—There was a breakdown at No. 1 shaft during the month of September, which, together with scarcity of labour, accounts for reduced tonnage milled.

Knights Deep. Results do not include 740 ozs. of gold from dismantled plates, the proceeds of which, viz., £3,103, will be earmarked for additions to plant. The reduced profits of the Knights Deep are solely owing to shortage of labour.

Jupiter.—Profit abnormal owing to practically no new ore broken and no development done.

East Rand Proprietary Mines.

The following are the results of last month's operations at the East Rand Proprietary Mines: 820 stamps milled 135,100 tons; 52,443 ozs. fine gold recovered, valued at £220,277, including 2,051 ozs., valued at £8,621, recovered from accumulated slime. Profit for the month, £83,460, including £6,566 profit from treatment of accumulated slime.

Sheba G.M. Co.

The following are the results of operations at the Sheba mine for the month of September: Crushings for the month, 6,320 tons, yielding 3,235 ozs. of fine gold; estimated profit, £3,930.

Brakpan Mines.

The following are the results of operations at the Brakpan Mines for the month of September: Stamps working, 140; running time, 25 days; ore crushed, 48,300 tons; tube mills working, 8; ore hoisted, 53,300 tons; ore from dump, 2,000 tons; waste sorted, 11·93 per cent.; fine gold declared, 15,681·44 ozs.; value declared, £66,016, equal to 27s. 4d. per ton milled; working costs, £45,814, equal to 19s. per ton milled; working profit, £20,202, equal to 8s. 4d. per ton milled.

Luipaardsvlei Estate.

The following are the results of operations at the Luipaardsvlei Estate for September: 60 stamps ran 28·642 days, crushing 17,000 tons, yielding 1,688 ozs. fine gold; 3 tube mills ran 29·644 days, yielding 634 ozs. fine gold; sands treated, 11,950 tons, yielding 1,475 ozs. fine gold; slimes treated, 5,050 tons, yielding 428 ozs. fine gold; profit from operations, £2,116; sundry revenue, £1,085; total profit, £3,201; working costs, 18s. 4½d. per ton; total working expenses, £15,626.

New Kleinfontein.

The following are particulars relative to the result of operations on the New Kleinfontein property for September: Stamps, 200; days run, 29·165; tube mills, 4; tons milled, 50,000; gold recovered, 15,747·704 fine ounces; net value, £66,139; profit, £23,139; working costs (excluding development), 15s. 8·84d.; development to working costs, 1s. 5·563d.; total working costs, 17s. 2·403d.; capital expenditure, £428.

Worcester Exploration.

The following are the results of operations on the Worcester Exploration property for September: Tonnage milled, 5,800; yield from mill, 802·475 ozs.; yield from cyanide, 369·347 ozs.; total yield, 1,171·822 ozs., valued at £4,950 10s.; showing an approximate profit of £1,250.

New Heriot.

The following are the New Heriot Company's returns for September operations: Tons milled, 12,600; recovered, 5,813 ozs.; profit, £9,326.

Rooiberg Minerals Development Co.

The following are the results of operations on the Rooiberg Minerals Development Company's property for September: Stamps, 10; days run, 28·9; tons milled, 3,221 short tons; concentrates, 110 long tons; average assay value metallic tin, 69·31 per cent.; estimated profit, £6,272; adjustments in respect of previous shipments to be subtracted, £128; profit for month, £6,144; net capital expenditure, £1,124. £2,689 has been included in working costs for the month in respect of shaft sinking, exploration and mine development. Tonnage milled includes 928 short tons sands retreated. The average price of metallic tin on which the month's revenue has been determined is £192.

Glynn's Lydenburg.

The following are the particulars of the Glynn's Lydenburg output for September: Tons crushed, 3,724, yielding 1,946 fine ozs.; estimated value of month's output, £8,242; estimated profit for the month, £4,371.

Transvaal G.M. Estates.

The following are the particulars of the Transvaal Gold Mining Estates output for September:—Central Mines: Tons crushed, 9,600, yielding 6,637·807 fine ozs. Elandsdrift Mine: Tons crushed, 665, yielding 866·793 fine ozs. Vaalhoek Mine: Tons crushed, 1,500, yielding 636·449 fine ozs. Estimated value of month's output, £34,191. Estimated profit for the month, £20,407. The decreased profit is merely temporary, due to reduced tonnage and grade at the central works. The labour supply has been inadequate, but the position this month has materially improved, and normal results are expected.

Labour Market.

The Inspector of White Labour in Johannesburg reports that during the month of August there were 561 applications for employment, an increase of 238 over the previous month. Applications from employers numbered 120, a decrease of 37. One hundred and fifteen persons were sent to work, a decrease of 26 on July. Applications for employment in mining occupations have increased during the month nearly four times; in the engineering trades, clerical and semi-professional occupations, overseers, attendants and messengers, handymen and unskilled labourers, the applications have just about doubled the numbers for July, and applicants in the building trades have increased 20 per cent. on the July returns. There were distinct indications that trade in general would show a falling off from the activity which had prevailed during the past three years, but it is apparent to anyone that the recent industrial troubles have aggravated the conditions now existing to a very great extent. The returns indicate clearly the general trend of recent events, but for reasons frequently expressed in former reports the actual state of unemployment is greatly in excess of that given in the Bureau returns. Immoderate agitation on the one hand, or indifference to the existing situation on the other, is sure to increase rather than diminish the present industrial difficulties. From sources of information which there are no reasons for questioning, the applications to this office in the building trades alone represent about one-fifth or one-sixth of those actually unemployed. It is, therefore, unwise under existing circumstances to encourage men from outlying districts, who are ignorant of the situation and conditions, to look for employment of a permanent character on the Witwatersrand. The smaller establishments are feeling the depression equally with the larger. A workshop with a usual staff of seven and eight white employes is now employing three. Further details, adds the Inspector, at the present time would be superfluous.

Finance, Commerce, and Industries.

Farming by Dynamite.

The fourth of a series of land settlement lectures, under the auspices of the Unionist Party Club, took place this week. The lecture, which was entitled "Farming by Dynamite," was given by Mr. William Cullen, general manager of the Modderfontein Dynamite Factory. Mr. A. Mackie Niven presided. Mr. Cullen dealt with the remarkable results obtained by dynamite in farming, and said that there was no reason why South Africa should not be as famous for her fruit and general agricultural products as she was for her gold mines. He had visited America recently, and was astonished at the progress agriculture had made there with the aid of dynamite. With the advantage of cheap labour, the lecturer continued, they could surely do as well here as in America. To illustrate the benefits derived from dynamiting the ground, the lecturer described several experiments made in the Western States of America. One man had found that the crops on the dynamited part of his farm were twice as good as those grown on the ploughed section. The lecturer then dealt with some experiments made in the Transvaal. In the Middelburg district Dr. Spencer had planted an apple tree, and in six months' time it had grown to the height of a three-year-old tree planted under ordinary conditions. The average cost of dynamiting an acre of land was about £3, but the area would not need to be touched for some five or six years. Owing to the dryness of the land, the conditions in South Africa were ideal for this particular kind of farming.

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Town Planning and the Engineer.

It is very rarely that the engineer has the fortune to be consulted in the laying out of a brand new city of any importance, his lot being rather the straightening out of muddles produced by the haphazard growth of towns during long periods of time, says *Eastern Engineering*. Certainly such rejuvenation work offers some of the finest opportunities for the engineer to display his ingenuity, but it has much of the character of "making the best of a bad job." On the other hand, where he is given a free hand to initiate a new city with all modern conveniences the engineer can produce a better result than anyone. Architects may be employed to design the outsides of buildings, but the designing of cities is really engineering work. It is thus satisfactory to find that engineering matters have been given thorough consideration in the laying out of the new Imperial capital at Delhi.

S.A. Irrigation Congress.

The third annual congress of the South African Irrigation Association will open on Tuesday, 11th November, at 11 a.m., in the Town Hall, Graaff-Reinet, and sit during the ensuing three days. The President (Sir T. W. Smartt, M.L.A.) is absent in England, but is expected back in time to take the chair. A programme teeming with interest is being prepared, the business including the discussion of a scheme by which it is proposed that the Association shall offer a prize of £100 for the best practical and commercial results to be obtained from a given area of irrigated land (say 10 morgen) within a given period (say one complete season). Papers are being prepared on such interesting subjects are "Some Conditions Which Affect Soil Fertility," by Dr. Juritz, the Chief Analyst; on "Land Drainage and Irrigation, with Special Reference to the Problem of Brak," by Mr. J. P. Marais, of Wonderfontein, Robertson, whose remarkable success in dealing with these problems on his own farm is well known; on "Closer Settlement under Irrigation," by Mr. A. E. Mills, of the Grootfontein School of Agriculture; on "Irrigation by Zaaidams, as Practised in the Arid North-West of the Cape," by Mr. Carel van Zyl, of Carnarvon, and others, the details of which have not yet been received. In addition to the above, members and visitors will be afforded full opportunities of seeing for themselves, under capable guidance, some of the more important irrigation and soil reclamation work which has been carried out by private enterprise in the district of Graaff-Reinet. At least two afternoons will be devoted to visiting farms like that of Mr. Walter Rubidge, Dalham, and that of Mr. G. Olivier, or others of a similar character. On the Friday afternoon the whole congress is invited by the Principal to visit the Grootfontein Agricultural College at Middelburg (Cape). This, being a typical Karoo farm of great extent, contains many features of attraction to practical irrigators, including the much-discussed Barbary ostriches. The college and its surroundings, with the unique fountain and flood irrigation schemes, are well worth a visit. The Association is always pleased to welcome visitors to its congresses, and as the Railway Department is announcing excursion fares at single charge for the double journey from all stations from November 1, the usual concession certificate is unnecessary. Those who intend to go to the congress can obtain full particulars from the secretary, Mr. L. D. MacDermott, P.O. Weenen, including information as to accommodation during the sitting of congress.

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Agricultural Statistics.

The matter of the formation of a Statistical Department for the Union of South Africa has for some time past been receiving consideration by the Minister of the Interior, and with that end in view Mr. J. B. Moffat, Director of Census for South Africa, during a recent visit collected much information on the subject in England, the United States and Canada, and from authorities on the Continent. Since his return it has been definitely decided that a Department of Statistics shall be established, and for some little time now Mr. Moffat has been drawing up his scheme for bringing this into being. The census work of South Africa, of course, will be in the hands of this Department, and in addition it is hoped that a Year Book of Statistics from the various Departments of State will be published towards the end of the current year. Of course this cannot be expected, with the organisation now available, to be perfect in every respect, but it will contain a mass of useful figures dealing with Customs, railways, Provincial Administrations, immigration, meteorology, industries, and so forth.

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The S.A. Mutual.

The sixty-eighth annual meeting of members of the South African Mutual Life Insurance Society was held this week. The chairman, Mr. Steytler, in the course of his speech, remarked on the excellent results of the past year's operations, which constituted one more record year. Proceeding, he said the triennial valuation disclosed a surplus of £897,685, after making provision for all liabilities. Of this £490,660 was absorbed in providing a bonus of £1 15s. per cent. per annum, which was the regular rate paid for the last 20 years. The directors had decided the valuation rate should be reduced from 3½ to 3 per cent. A sum of £300,000 had accordingly been set aside as the equivalent of such reduction. This left a balance of £107,025, of which £14,786 was added to the investment and reserve fund, and difference carried forward to the current triennium. The society's valuation had now been placed upon the same basis as that of the great majority of British companies, whereas it earned substantially a higher rate of interest.

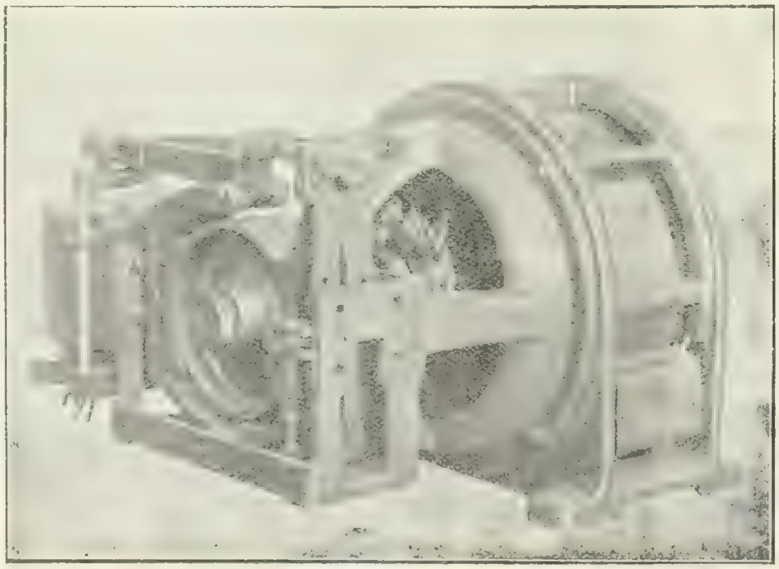
* * * *

Electrical Trade in South Africa.

From the point of view of the electrical trade the report of the British Trade Commissioner in South Africa contains much information of interest. Sir Sothern Holland refers at some length to the importance to the electrical trade of the installation of electric power on the Rand, and gives figures which show that whereas the imports of electrical goods in 1907 were only £308,513, they increased to £1,428,888 in 1910; as installations were completed imports subsequently showed a falling-off, but in 1911 and 1912 respectively they amounted to as much as £1,030,627 and £917,186. The Commissioner points out that, unfortunately, the great bulk of these enormous supplies has been, and continues to be, drawn from foreign firms. From time to time he has discussed with the representatives of the companies concerned the loss of this important trade to British firms. The following interesting statements summarising the reasons for placing these orders abroad has been supplied to the Commissioner, and is submitted by him for the information of British firms. "The business of generation and supply of electric power in the United Kingdom has developed on the lines of a series of small undertakings, as an instance of which might be cited the supply of power to London, where there are 14 different companies, 13 municipal supplies, and at least six stations for supplying the railway companies. Similarly, throughout the country small power stations are to be found situated within a few miles of each other, each serving their immediate district. As a consequence, the demands on the manufacturing industry in England have led to factories and designs suitable for supplying the requirements of such a market. On the other hand, both in America and on the Continent, the economy and advantage of large bulk supply power undertakings has been fully realised many years ago, and the electrical engineering business has been developed on the basis of having huge power stations, which sell in bulk to the different districts and towns. The Victoria Falls Co. is similar to the bulk-suppliers in America and on the Continent, as, in spite of the fact that the district served is relatively small, the amount of power to be supplied is probably greater per mile than in any other district in the world. This fact has led to the factories abroad obtaining experience and laying down machinery for producing mammoth plant and for supplying apparatus to deal with extremely high voltages necessary for handling these large amounts of power. On the other hand, the demand for large steam plant and the experience in Great Britain with boiler plant (both ashore and at sea) has placed the British boiler maker in a favourable position and, indeed, in advance of other nations; this has enabled the Victoria Falls Power Co. to place their business in boilers in the United Kingdom. When the company was first started it was desired to negotiate the securities in Great Britain, but this was not found to be possible. In the first instance, the bonds were taken in Germany, leading to the earlier industrial orders for the electric portion of the plant being placed in that country. The later issue of bonds has been taken in Great Britain, and for some time all orders have been placed in competition, and the best offers have been selected. In the case of machinery and apparatus for voltages which are not employed in England, the tenders received from abroad, as might be expected in view of the above particulars, are more favourable, but at the same time many orders are being placed in Great Britain, for all such work as the manufacturers are able from experience to produce." As a result of the completion of these power works, Germany's total trade with South Africa, which amounted to £3,512,909 in 1910, has decreased to £3,230,021 in 1912; the imports from Germany in 1907 amounted to only £1,923,085. In 1912, however, the imports of electrical machinery from Germany were nearly double those from the United Kingdom.

National Bank Interim Dividend.

Notice is given that an interim dividend at the rate of 6 per cent. per annum has been declared for the period 1st January to 30th September, 1913, being 9s. per share. The dividend will be payable on 25th November to all shareholders registered in the books of the company at close of business on 14th October, and to holders of coupon 30 attached to share warrants to bearer.



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South African

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JOHANNESBURG.

DURBAN. CAPETOWN.

THE WEEK IN THE SHAREMARKET.

Stagnant—Specialities Better—Rand Stocks Maintain Firm Undertone.

APART from some activity in Barnato stocks, there is still little doing in the Market. Van Ryn Deeps and State Mines were more active, and the former continue to appreciate in price. State Mines fell on the publication of the assays from the fourth shaft, but firmed up later. These assays, of course, prove nothing in regard to the future of the mine. Tins remain inactive, and diamonds have been a quiet market. Pilandsbergs have been disappointing from the market point of view, and Frank Smiths, despite the excellent reports from the property, have on'y had a small rise in face of the general apathy. Crowns are likewise quiet; Greigs inactive, and other syndicates hardly mentioned. To-day is a holiday on the Stock Exchange, and it is expected that things will open better on Monday.

	Friday, 3rd.	Sat., 4th.	Tues., 7th.	Wed., 8th.	Thurs., 9th.
Adair Ushers	0 3B		0 3B	0 3B	0 3B
African Farms	14 6B	14 9	14 6B	14 6B	14 6
Apex Mines	-	19 0s	20 0s	19 0s	
Bantjes Consolidated ..	14 6B	14 0B	14 0B	14 0B	14 0B
Benoni Consolidated ..	2 0B	2 6s	2 3B	2 0B	2 0B
Brakpan Mines	55 3s	53 0B	53 3B	54 0B	53 6B
Breyten Collieries	25 0B	27 0B	-	25 0B	26 0B
British S.A.	—		-	20 0B	19 0B
Bushveld Tins	0 6B	0 8B	0 7B	—	0 8B
City & Subs. (£4)	46 0	46 3B	46 9	46 0	46 9s
City Deeps	54 6B	54 6B	55 0s	53 6B	54 0B
Cloverfield Mines	4 0B	4 1B	4 1B	4 0B	4 0B
Clydesdale Colls.	8 3B	8 6B	8 6B	8 6B	—
Cons. Langlaagtes	25 6B	—	25 9B	26 0B	26 0B
Cons. Main Reefs	17 0B	17 0	17 0	17 6s	—
Cons. Mine Selection ..	8 9B	-	-	8 9B	—
Coronation Freeholds ..	0 6	-	- -	0 6s	0 5B
Crown Diamonds	9 9	9 3B	9 0B	9 0B	—
Crown Mines	133 9s	—	- -	—	—
Doornhoek Tins	6 0s	—	6 0s	5 9s	6 0s
East Rand Centrals ..	8 0B	8 0B	8 0B	8 0B	—
East Rand Coals (2/6) ..	1 10B	1 10B	1 9B	1 9B	1 9B
East Rand Deeps	1 4B	1 3B	—	—	1 4B
East Rand Props.	—	44 6	—	44 0*	43 9B
Eastern Golds (1/-)	1 1B	-	—	1 2B	—
Frank Smith Diam. ..	9 0B	9 3	9 0B	9 3B	9 3
Geduld Props.	22 0B	22 6	22 0B	21 0B	22 0B
Geldenhuis Deeps	-	30 0s		—	—
Glencoe (Natal) Colls. ..	7 3B	—	7 3B	7 0B	—
Glynn's Lydenburgs.. ..	15 0B	-	-	16 0	15 0B
Government Areas	20 6	20 3	20 0B	19 3B	19 3B
Jupiters	3 0	3 0B	4 0B	3 3B	3 6
Kaalfontein D. (2/6) ..	0 3B	- -	0 4	0 3B	0 4B
Klerksdorp Props.	2 2B	2 2	2 0B	2 1B	2 1B
Knight Centrals	6 0B	6 0B	6 6	6 2	6 1B
Knights Deeps	—	-	35 0s	—	34 0s
Lace Props.	2 9B	2 9B	—	—	2 6B
Luipaardsvlei Estate ..	7 6B	7 6B	7 6B	7 6B	7 6B
Lydenburg Gold Farms ..	2 9B	2 9B	2 9	2 9	2 10B
Main Reef Wests	8 0B	8 3B	8 6B	8 6B	8 0B
Middlevlei Estates	—	1 0B	1 0B	1 0	1 0B
Modder B's	75 6B	76 0B	76 0B	76 6B	76 6B
Modder Deeps	30 0B	30 9	30 9	30 0B	30 0B
Natal Navigation Col. ..	—	- -	14 0B	—	—
New Boksburgs	—	—	—	0 6B	0 6B
New Era Cons. (5/-) ..	6 3B	6 3B	6 3B	6 3B	6 3B
New Geduld Deeps	2 0B	2 0B	2 0B	2 0B	2 0B
New Kleinfonteins	23 0s	23 0s	22 6B	22 6B	22 9
New Modders	-	225 0B	—	—	—
New Unifieds	12 0B	14 0s	—	14 3s	—
Nigels	15 0B	—	—	15 0B	—
O.F.S. & Trans. Dia. ..	1 6B	1 6B	1 6B	1 9B	1 9B
Pretoria Cement Co. ..	46 0B	—	—	—	—
Princess	4 0B	4 3B	4 3B	4 3B	4 3B
Rand Collieries	—	—	3 0s	—	—
Rand Klips	1 9	1 9B	1 8	1 7B	—
Rand Nucleus	1 9B	—	1 9B	1 8B	1 8B
Randfontein Estates ..	26 6B	26 6B	26 6B	26 6B	26 3B
Roberts Victors	—	34 0s	—	28 0B	—
Robinson Deeps	—	29 0B	30 0s	28 0B	28 0
Rooiberg Minerals	27 3B	27 3B	27 6	27 6B	27 6B
Ryan Nigels	—	—	3 0B	—	—
Shebas..	5 0B	5 0B	5 3B	5 0B	5 0B
Simmer Deeps	1 6B	1 6B	—	—	—
S.A. Breweries	40 0B	40 0B	—	40 0B	40 0B
S.A. Lands	3 3B	3 3B	3 3B	3 4	3 3B
Springs Mines	15 3	15 0B	15 6s	15 0	14 9s
Sub Nigels	8 6B	9 0B	—	—	8 6B
Trans. Coal Trusts	32 0	31 0B	—	31 9	31 0B
Trans. G. M. Estate ..	49 6B	—	—	50 0s	—
Van Ryn Deeps	34 3	34 6B	36 0	35 6B	35 6
Village Deeps	35 0B	—	36 3	—	34 6
Vogel Cons. Deeps ..	0 9B	1 0	—	0 9B	—
West Rand Estate	2 6B	—		2 6B	2 6B
Witbank Collieries	39 0B	39 0B	39 0B	39 0B	39 0
Witwatersrands	68 0B	68 0B	68 0		70 0
Wit Deeps	56 6	57 0B	57 0B	57 0B	57 0B
Wolhuters	15 6	15 6	15 3	15 0B	15 0B
Zaaiplaats Tins	35 3	35 6	[illegible]	34 6	33 9

B Buyers. S Sellers. 25 Shares.

Mr. H. C. Behn has opened an office in New York.

* * * *

Mr. F. P. Mennell has opened an office in London.

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Mr. Percy Marsden is on a visit to South Africa.

* * * *

Ambulance work on the Rand is being given an excellent lead by the Crown Mines employees. About 200 men have notified their intention of attending the ambulance classes to be held on that mine next week under the auspices of the South Africa Red Cross Society. Among other mines about to start classes under the same regime are the Geldenhuis Deep, Ltd. Even the country districts are taking up the subject, enthusiastic classes having been formed at Rustenburg and Bethal.

Harrisdale Diamonds.

In a report by Mr. S. S. Dismore on the farms Romance, Harrisdale and Williamstown, situated on the north bank of the Vaal River, about 18 miles from Kimberley, in extent about 40 square miles, it is stated that:—

"The area covered by these farms contains an enormous area of diamondiferous gravels, covering at a rough estimate about one-third of the total surface These gravels have been tested at many places and records of diamonds found show that, considered merely as an ordinary alluvial field, the diamond contents are probably above the average of the surrounding fields. In addition to the ordinary alluvial gravels, however, there have been found deposits of a special character, which have yielded extraordinary returns of diamonds from small quantities of ground. At one such place, known as Mayer's Prospect, about fifty thousand pounds worth of diamonds were taken out in a period of about two months, and a further thirty thousand pounds later. This was some years ago when diamonds were at the lowest value they have been for many years and the same diamonds to-day would command at least double the price they were then sold for The character of these special deposits is exactly similar to the famous occurrence on Droogeveldt, New Vaal River Estates, where many fortunes of from five to twenty thousand pounds have been made during the past ten months. I am confidenut that extensions of the first of these areas will be located when work is directed on certain lines, and that several lines of these rich deposits will be developed. The area also contains many occurrences of Kimberlite both in fissure and mine form. One of the mines has been tried and yielded twenty-one diamonds of good quality, weighing seven and three quarter carats I should estimate from about two hundred loads. The pipe has not been, in my opinion, completely tested, as only the top stuff was washed At another place there is an area of about five hundred claims where the surface indications strongly point to the existence of a pipe of about that claim area The surface here is white lime, mixed with pebbles and fragments of shale, carbon, garnet and olivine, and diamonds have been recovered from this material to a depth of fifteen feet. From this place southwards there is a chain of alluvial diggings which have yielded fine quality diamonds, and there is a strong probability that the source of the diamonds found in these diggings is the area above referred to. In case this should be proved to be a pipe of the size indicated, it will be a mine of the first importance I will add that I know of no other place or area of ground in South Africa where the alluvial gravels have such a high average of diamond contents. A record which I have carefully checked of actual digging carried on by one man attending about one quarter of his time and an average of six boys during the past eighteen months on the ordinary alluvial area known as the Bluff, will indicate what I mean in this respect: this shows a yield of twelve hundred and forty-nine pounds worth of diamonds recovered at a cost of about four hundred pounds and this spread over eighteen months' work. When to this large area of ordinary alluvial gravel is added the prospect of finding several more of the exceptionally rich areas referred to in this report, and also the good prospect of opening a mine carrying high-class diamonds in payable quantities I consider that the diamond value of this estate is very great."

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Engineering Notes and News.

Electrical Distribution for Mines.*

By J. W. Anson.

It is apparent at the present time that the future success of the South African goldfields will be largely dependent on the electrical engineering work which has been accomplished during the past two and a half years, that which is being carried out at the present time, and also that which will undoubtedly be undertaken in the near future. Now that the extreme flexibility of electricity as a motive power has been conclusively demonstrated, it is not too much to say that in all future winding and reduction plants erected on these goldfields the design of these plants will be such that electricity will be employed as the motive power throughout. Furthermore, all future extensions, additions and new processes will be dependent on electricity for their energy, and under these circumstances it behoves the members of this Institute, by whom the greater portion of the electrical work will be carried out, and by whom the science of electrical engineering is represented on these goldfields, to carry out the work in such a manner as to produce a safe, reliable and well-finished job. As the majority of the mines use power purchased at suitable pressures—the minority have their own power stations—the author proposes to deal with those mines which draw their energy from a transformer house or transformer houses erected on the mine property, containing the transformers which transform the extra-high tension, three-phase, alternating current taken from the power supply company's network into three-phase current suitable for use on the mine. This secondary voltage is either 2,000 or 500 volts, and these pressures are used on the mine motors according to their size and horse-power. It is impossible to over-estimate the importance of the mining company's side of the transformer houses, as the switchgear in the transformer house is the only portion of the electrical equipment which it is impossible to duplicate. It is essential, therefore, that the utmost thought and consideration should be devoted to the design of this portion of the equipment. The following facts should be remembered :—(*a*) After the bus-bars have been made alive and put on load, it may not be possible to make them dead again at any time. For this reason, work on bus-bars and solid connections attached to bus-bars should be absolutely complete down to the smallest detail before they are made alive. (*b*) Owing to the large capacities of the generating stations and distribution systems of the Victoria Falls and Transvaal Power Company and the Rand Mines Power Supply Company, the effect of a short-circuit across the phases might be disastrous. It therefore becomes necessary to isolate each phase as much as possible; to reduce to a minimum the amount of combustible material used in the construction, in order to lessen the effects of fire; and, finally, in the event of serious trouble arising, to confine that trouble to one place, so that the whole of the switchgear is not destroyed. Bearing in mind the above fundamental principles, one can now proceed to lay out the general features of the equipment in the following manner :—The bus-bars should be of ample cross-sectional area throughout to carry the whole of the current available from the secondary windings of the transformers, and should be totally enclosed in brickwork or slate chambers. They should be supported on combined bus-bar insulators and connectors over each panel, from the underside of which connections should be made to the top side of the isolating links for that panel. The main feeder panels should be enclosed on each side by brickwork barriers. All the high-tension apparatus belonging to any one panel should be contained in the cubicle for that panel; this comprises isolating links, connectors, main oil switch, current transformers and cable box or boxes. The isolating links may be carried on two angle irons, running the whole length of the station, through the brickwork forming the cubicles. From the top contacts of the isolating links to the underside of the combined bus-bar insulators and connectors it would probably be convenient to connect with copper strap, but from the bottom contacts of the isolating links to one side of the main oil switch and from the other side of the main oil switch to the current transformers, bare tinned copper rod, $\frac{5}{8}$ in. or $\frac{3}{4}$ in. in diameter, should be used. This bare copper rod is extremely neat in appearance and, of course, is free from combustible insulating material. The main feeder switches should be of ample current-carrying capacity, and have as great a rupturing capacity as possible. There is no doubt that the troubles and delays experienced in the past, due to explosions occurring in main feeder swich tanks at the instant of the feeder switch tripping on a heavy fault, have been caused by the smallness of the switches. Facilities should be made for emptying the oil out of any switch tank before the oil is taken down, and a gauge should be provided to show that the oil is at the correct level when the oil tank is in place. The oil tank should be lowered by a handle working a worm and worm wheel. The name of the feeder or feeders controlled by any oil switch should be stencilled on the back of the oil tank of that switch. The name stencilled on the oil tank of any switch should agree exactly with the wording of the usual label on the front of the panel. When it is necessary to work on any cubicle, after opening the feeder switch at the front of the board and proceeding to the back of the board, there is no fear of a man starting to work on the wrong cubicle if the above precaution is taken. Many cases have occurred in every part of the world where operators have opened the switch belonging to a certain panel, and after proceeding to the back of the board have started to draw the isolating links of another panel, with disastrous results. It is unnecessary to fit no-volt releases to feeder switches, provided that every motor on the circuit supplied by any feeder is controlled by switch-gear having a no-volt release. It is most undesirable when a failure in the power supply occurs to proceed to the transformer house and close all switches which have been opened by their no-volt releases. This applies particularly at night time, and especially where the transformer house is some distance from the reduction plant. All motor switches should trip when the power fails; but when the power is switched on again it is most desirable that the whole cable network, right up to every motor switch, should also become alive. Should any motor switch fail to be tripped by its no-volt release, leaving the motor stator connected to the line, with the rotor probably short-circuited, this switch would undoubtedly trip on overload when the power was switched on again. A pilot lamp transformer should be connected to the tail ends of the cable box of every 2,000-volt feeder leaving the transformer house. The transformer should be about 50 watts capacity, ratio preferably 2,200/110 volts, and the secondary winding should supply two 8 c.p. carbon filament lamps connected in parallel. This is an almost infallible method of indicating whether the main feeders are under pressure of otherwise, as the pilot lamps will be alight in any case, whether the feeder is alive from its own feeder switch or the net work, and the feeder switch open. The transformer house should be properly lighted for night operation, and the switch should be near the main door; the operating corridor on the power company's side should also have four or five lights wired up and ready for instant use. On the mining company's side, in addition to lighting current supplied from lighting transformers in the ordinary way, it is extremely advisable to have a few lights connected up on an entirely separate circuit supplied from dry cells at a pressure of 25 volts. It is quite possible that if there is a serious breakdown at night in the main switch house, necessitating urgent repairs, current would not be available for lighting purposes, in which case the separate lighting circuit would be useful. If there is a local telephone system on a mine, the transformer house should be connected up to this system. Each phase in the transformer house should be painted a different colour, which should be adhered to in every link cage and switch case throughout the cable system. It is most essential that any interconnecting cable between any link cages on the system can be made alive and connected up to both sets of three-phase bus-bars without any fear whatever of a short-circuit. An earth-plate, at least 5 ft. by 5 ft. should be sunk in wet coke breeze near every transformer house, and all iron frameworks, lead covering and armouring of all cables should be connected to this earth-plate. A vertical pipe having access to the coke breeze should be fixed in the ground, so that water may be led on to the coke breeze occasionally.

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* Abstract of a paper read before the South African Institute of Electrical Engineers.

(To be continued.)

Protecting Iron with Paint.

According to a note published in "Cosmos," the German chemists Liebreich and Spitzer have been conducting some experiments with regard to the protection afforded to iron against rusting by a coat of paint. They come to the conclusion, which is somewhat surprising at first sight, that better results are obtained by the application of a single coat than by painting with two or more coats. The explanation which they offer for this somewhat remarkable observation, is that a single coat is more elastic and less liable to scaling off or cracking than a double coat, and thus affords more perfect protection from atmospheric influences.

New Patents.

449. Chas. Kirk and James Hamilton.—An improvement for connecting the flanges of rollers varrying wire ropes in mines which will prevent them coming loose.
450. Herbert Alfred Read.—A new or improved means for detecting unexploded blasting charges in mines and the like.
451. Charles Herendeen.—A machine and method for treating flour.
452.—Charles Henry Perrins.—A process for recovering tin from scrap metal.
453. Walter Augustus Olive.—Improvements in safety catch devices for mine skips, cages, lifts and the like.
454. George Tom Cannon.—Improvements in rope grips or jockeys for mechanical haulages and the like.
455. James Dunlop Wilson and Maurice Solvie Aaron.—Improvements in drills and detachable bits therefor.
456. James Hamilton Austruther Macadam, John James Robert Symthe, Charles Wilson McKelvie King, and Ferdinand George Krause.—Improvements in rock drilling machine valves.
457. Carl Hatman.—Improvements in or relating to the manufacture of hexanitrodi phenylsulphide.
458. Carl Hatman.—Improvements in or relating to the use of explosives for filling projectiles, mines, torpedo primers, detonators and the like.
459. Harry Alexander Stenning.—Improvements in and relating to controlling devices suitable for the cylinders of locomotives.
460. Cyril Douglas McCourt (Bonecourt Surface Combustion, Ltd.).—Improvements in or in connection with heating by combustion of combustible mixtures and in furnaces therefor.
461. Richard Monra Dixon.—Compressed air filter.
462. Alexander Granger.—Improvements in pulverising apparatus.

INVESTORS' DIARY.

The following company meetings have been announced:

Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—**Rooiberg Minerals.**
Oct. 31.—**Knights Deep.**
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre Wheeler Edwardes Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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Automobile Notes.

The following is the continuation of the paper read before the Imperial Motor Transport Conference held in London in July, 1913, by Mr. W. W. Hoy, General Manager of the South African Railways and Harbours:—

The question of supplying water for cooling purposes or for feeding steam boilers is an important one in a good many South African places, and deserves special notice. Water is dear and may cost more than five shillings per thousand gallons. In such cases the system of cooling gas or oil engines is of great importance. The electrical plant is largely independent of the type of prime mover, except that for direct coupling the speed of the generator must suit that of the engine. Direct coupling is on the whole best, and the cost is very little more than the indirect drive, as dynamos are nowadays comparatively cheap. In order to ensure a continuous supply of current, reserve plant is essential. When installing a new power house equipment it is safe to double the actual plant required and leave room for future extension as well. The control should be simple but effective. It should be possible to see what each machine is doing, what power goes into and leaves the battery, and the total work of the day, week and year. A few words might be allowed about the station buildings. Room for expansion should always be allowed. Where proper shifts are not contemplated, it might even be advisable to provide quarters for the engineer or an assistant, so that in case of emergency someone is always on the spot. The burning out of a fuse or the tripping of a circuit breaker might be indicated by the ringing of a bell or other audible signalling arrangement. If the engineer is to live on the premises the building is best erected in brick work, otherwise iron may be employed. Besides the engine and the battery rooms, the building must contain accommodation for the boilers or gas generators, a little workshop with a small motor-driven lathe, an office and a store-room. Oil tanks may be placed outside without coverings, as long as they are periodically painted. A good deal of labour, a large number of cross arms and insulators may be saved by a judicious arrangement of the network and especially of the feeders. The smaller the number of feeders the shorter and lighter may also be the poles. This is of considerable importance where the material has to be carted over long distances after the railway line is left, and even where a station lies on the line, the freight to inland towns is considerable. The choice of poles is then also of importance. The lightest poles for a given tensile strength are those of weldless steel. Lap welded poles with cast iron base tubes weigh at least half as much again. Steel poles are, however, not suitable at every place, especially near the sea. Experience shows that sea water and even sea air causes corrosion very quickly, often at an alarming rate. At Port Elizabeth the tramway poles had to be reinforced shortly after they had been erected. This was done by placing old tram rails inside them and filling the intervening space with concrete. In inland towns steel poles are suitable enough. A good deal of corrosion is, however, caused by dogs committing nuisances against the poles, which may be avoided by giving the lower part a dog repelling coat of paint, such as is given to shop windows. A sloping concrete base will also do, but this increases again the price of erection. The number of poles depends upon the distance between them. A suitable distance between street lamps in country towns is about 80 yards, which in out-of-the-way lanes may be increased to 120. These distances are, of course, too great for a single span. For light steel poles a distance of 40 yards is convenient, which means that a lamp is placed on every second or third pole respectively. Even for a low pressure distribution every pole must be properly earthed according to the Ordinance. This is usually done by connecting all poles together by means of a wire and earthing a number of poles thoroughly. Personally, I think this is a wise rule, because there is no doubt that in this country a pole with a base plate does not always form a good earth except where the sluits carry water. It may then happen that there is a leak pressure of 70 to 80 volts between the point of contact on the pole and the earth on which the person is standing, a pressure which in some cases has proved fatal. Further care must be taken that, in case a wire snaps, the short circuit caused trips the circuit breaker. By simple contact with the ground this will not happen in nine cases out of ten, as in this country the ground is very often almost an insulator. To prevent accidents in this case, the middle wire of a three-wire network is placed in two parts on the out-

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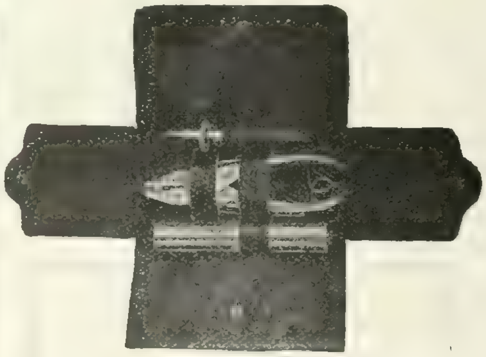

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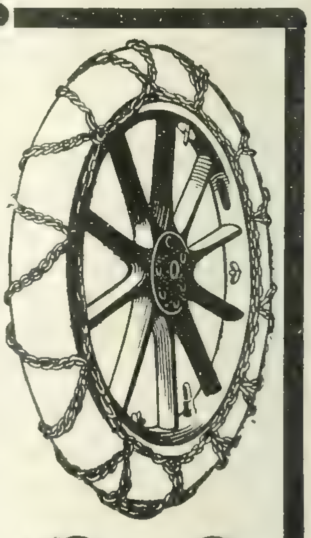

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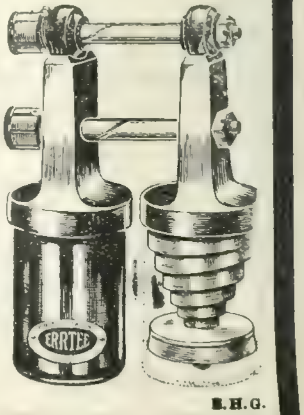

S.H.G.

side of the lowest cross-arm, the two sections being joined together twice between the poles. On the catching framework of metal is placed under each cross-arm, with which the broken wire must come into contact when it snaps, thereby causing a short-circuit with the earthed middle wire. Earthing of the latter is, I believe, a necessity in this country, although opinions are somewhat doubtful on the preference of this procedure. In places where thunderstorms are of frequent occurrence, protecting devices are required. They may be left out in places where the lines are protected by trees. The greater we make the number of feeders the better is the distribution of the voltage, but the more expensive will be the installation. The smaller we make the number or wires to be carried by a single pole, the shorter the latter may be. In this country no wires must be lower than 18 feet above ground at any point, and where they cross the streets, the figure is 25 feet. This means that the shortest poles must be at least 25 feet long, and at street corners 30 feet. Where a number of feeders are carried as well as the consumers network and the street lighting, even 30 feet poles are not long enough. But the price of a pole increases very rapidly with the length, so that the question of the number of feeders is important even from this standpoint. To make this number small, it is advisable to combine consumers and street lighting feeders, to meter the street lighting on the poles or in feeder pillars, and to provide special switching arrangements for the street lighting. When consumers and street lighting feeders are combined, special switching arrangements are wanted for the public lighting. In this country, where the length of the day varies comparatively little throughout the year, it suffices to adjust the time switches once a month. As feeder pillars have to be erected for the meters registering the consumption of street lamps, the time switches may be placed into the same pillars. The switching in and out of street lamps may also be accomplished with relays, which are energised by an alternate current temporarily superposed upon the network current. The prices to be charged for electric current have to be so adjusted that the undertaking becomes a financially sound one. To obtain the necessary consumers, these prices must not be too high, otherwise the people will stick to their oil lamps. This is especially the case in South Africa, where one does not hear infrequently: "What was good enough for my parents is good enough for me." The greater convenience of electric light is therefore not the only quality which will make it attractive, but the price must compare favourably with that of oil. The capital outlay must therefore be kept low, so that interest, sinking fund and depreciation, to which wages must be added, are all items, each of which has to be carefully studied. In dealing with different types of plants, the total annual cost must be known in each case, before a decision can be reached. On the whole one may say that even in this country, where people have a greater buying capacity than in Europe, a scheme of electric lighting is hardly justified of being carried out if the price per unit exceeds 1s. 6d. Supposing, however, that a scheme has a fair promise of financial soundness and is being carried out, the people have to be persuaded to commence the wiring of their houses. It is not enough to tell them that the municipality has decided to instal electrical plant for the supply of current and that the price per unit be so much, whereby a fifty candle electric lamp does not cost any more to burn than a similar oil lamp at the high price of oil in this country, the people want to know exactly how much it will cost to wire their houses. The following were the figures which we were able to obtain for Stellenbosch; £1 15s. per point for one point installed, £1 7s. 6d. per point for two points installed, £1 5s. per point for three or four points installed, £1 1s. per point for five to nine points installed, £1 per point for 10 to 19 points installed, 18s. per point for 20 or more points installed. Some difficulty is usually experienced with people who are tenants. The landlord is often not willing to spend money on a house which brings in no return, and the tenant does not like to instal the wiring, as he does not know how long he will enjoy the benefit thereof. The difficulty is overcome by the landlord installing the wiring and the tenant agreeing to pay an extra 2s. 6d. per month. As regards the connections from the network to the consumers' premises, the costs are best equally shared by the municipality and the landlord. It is the universal practice in this country to instal a meter in each house and charge according to the units used. For day loan often half the night price is charged and for motive purposes a special flat rate. This method is on the whole fair, as meters are cheap nowadays, the outlay for the municipality is not very great and may be regained by a meter rent. From the example given it will, however, be seen that the expenditure as far as the outlay for fuel is concerned amounts to about 10 per cent. only. Under these circumstances, I do not know whether a fixed charge for a given house, in the form of a rate, would not be better. This would, of course, lead to a certain waste, but it would certainly popularise the use of the current, the people would know what they would have to pay at the end of the month and the municipality would be sure of a certain income and could regulate the price of current accordingly. Even supposing that 50 per cent. of the light were wasted, it would mean only another £100 in the example quoted and save the salary of the meter reader. The meters might even be installed for such a system, and the rate could include current up to a certain minimum, after which extra payment must be made. Two-rate and flat rate meters would then be largely superfluous, and the meters installed need not be read more than twice or three times a year. In giving you an outline of the various points which have to be considered when designing small electricity undertakings, one thing stands out pre-eminent—the high initial cost. It is impossible to look through a large number of tenders without feeling that there are a good many people in this country doing work for which they are hardly fitted. Take the erection of a pole. The prices vary from 6s. to 31s. 6d. for the same piece of work. It clearly shows that in many cases the tenderer must have a very hazy idea of what a workman is capable of doing. Even the price for the building is too high, although the figure given was the lowest received. It means, of course, that the bricklayer is assumed to lay 300 to 400 instead of 2,000 bricks per day. I feel convinced that, if firms of standing picked their men carefully and carried out the work more scientifically—even common labour may act scientifically—the initial costs of electricity supply undertakings could be materially reduced, and every little town would go in for a supply.

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QUARTERLY REPORT.

Knights Deep.

THE report for the quarter ended the 31st July on operations at the Knights Deep states that the development footage accomplished was 789 feet, of which 560 feet were sampled with the following results: Main Reef: 310 feet; reef width, 39.7 ins.; reef value, 8.65 dwts. South Reef: 250 feet; reef width, 19.8 ins., reef value, 15.1 dwts. Totals and averages: 560 ft.; reef width, 30.8 ins.; reef value, 10.48 dwts. The reef is a compact body, and when stoped at a probable width of 65 inches the value becomes reduced by 5 dwts., and is still further reduced by the time it reaches the mill by the mixture of some reclamation and development rock. The tonnage crushed was 273,300 tons, from which a total yield of 46,254.417 ozs. was obtained. The revenue from gold amounted to £194,332, or 14s. 2.653d. per ton. Working expenses absorbed £160,720, or 11s. 9.137d. per ton, which left a working profit of £33,611, or 2s. 5.516d. per ton. Sundry revenue brought in £4,613, making the estimated total profit £19,360. Against this total there are the following charges: Miners' Phthisis Compensation Fund £1,421; estimated appropriation for addition and renewals fund, £3,921; provision for redemption of debentures, £5,500; debenture interest and charges, £1,344; Consolidated Goldfields share of profits, £5,422; profits tax, estimated, £1,000; appropriated for shaft sinking, £257; leaving the estimated total profit carried down at £19,395. The amount spent during the quarter chargeable to additions and renewals was £12,306. During the period 23,203,593 gallons of water were pumped from the mine, as compared with 24,809,689 gallons during the previous quarter. As stated in the published returns for the month of July, 1913, operations for that month resulted in a loss of £7,761. The running time for the month was only 18.8 days, and this was due in part to the unavoidable cessation of reduction operations during the days of the recent strike, but mostly to the fact that your engineers considered it advisable to take advantage of the stoppage of the plant to make certain alterations to the crusher station. This latter work, the benefits of which are now being experienced, entailed the restarting of reduction operations at a later date than would otherwise have been possible. The temporary prohibition by the Government during the month of July of all recruiting of natives—a direct consequence of the general strike and of the unrest that followed—has resulted in a serious shortage of native labour on these fields, and your company has been considerably hampered in this connection. Your company incurred special expenditure as a result of the strike, amounting to approximately £5,100. This amount is not included in the published figures of expenditure for the quarter, but will be written off in the balance-sheet for the financial year ended 31st of July, 1913. During the quarter 769.492 ounces of gold, of an estimated value of £3,225, have been recovered from the dismantled mill plates. This gold is in addition to the published revenue figures for the quarter, and the value has been credited to the fund for additions and renewals of machinery and plant. An additional amount of 515.708 ounces, of an estimated value of £2,162, has been recovered from the same source during the month of August, 1913, and has been similarly dealt with. The profits for the month of August, 1913, including sundry revenue, amounted only to £12,097. This decreased profit is attributable to the following causes: (1) That owing to the shortage of native labour above referred to it was not possible to supply ore to the reduction plant up to its full capacity, and, as a result, only 105,000 tons were dealt with during that month. (2) That owing to the removal of the amalgamated plates in the stamp mill, and the consequent delivery of a richer pulp to the tube mill circuit and cyanide plant, a large absorption of gold has taken place in the latter portions of the reduction plant. Since the date of the last quarterly report, the directors have decided to exercise the option over the Simmer and Jack East property. The joint working arrangement with the Consolidated Gold Fields of South Africa, Limited, was terminated as at 30th of June 1913, and since that date the two properties have been worked as one. The authorised capital of the company has been increased by 93,526 shares, and now stands at £713,526, in 713,526 shares of £1 each all issued, the new shares, together with 6,474 shares previously held in reserve, having been issued to the Consolidated Gold Fields of South Africa, Limited, as consideration for the purchase of the property. These shares, however, did not participate in the dividend of 12 per cent. recently declared, but will rank for all future dividend *pari passu* with the other shares of the company

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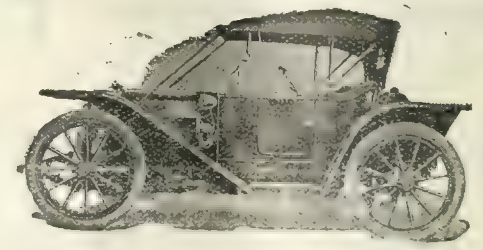
Congress of S.A. Chambers.

The following, among the matters tabled for discussion at the recent Congress of Chambers of Commerce by the Johannesburg Chamber of Commerce, were dealt with:—(a) Acceleration of European Mail Service: A resolution was voted on and negatived by 18 votes to 16, as follows:—That in the opinion of this Congress the present arrangement of the European Mail Service results in the greatest inconvenience to commercial and banking houses in several parts of the Union, and in order to obviate this the Congress urges on the Government to call on the Contractors under the Ocean Mail Contract to accelerate the mail service from Southampton to Capetown. The following were agreed to:—(b) Codification of Divergent Laws: That, in the opinion of this Congress, legislation should be introduced by the Government at the earliest possible moment for the codification of divergent laws of the Union, more particularly those relating to insolvency, companies, weights and measures, tacit hypothecs, registration of deeds, patents, trade marks, designs and copyright. (c) Prevention of Corruption: That the Congress take immediate steps to urge on the Government and members of the Legislative Assembly the necessity of a Secret Commission Bill for the Union. (d) Registration of Businesses: That legislation should be enacted making it compulsory to declare and register the names of all partners of firms trading within the Union, and that the Transvaal Registration of Businesses Act should be the basis. (e) Municipal Contracts: That the practice of South African Municipalities to require independent sureties for the performance of contracts is a hardship, and that it is in many cases unnecessary, especially so whenever the supply of goods forms the principal element of the contract. (f) Sale of Liquor: That this Congress considers the illegal sale of liquor to natives to be a great menace to prosperity throughout the Union, and urges on the Government to consider and adopt all reasonable means for the suppression of this traffic. (g) Maize Contracts: That tenderers for maize contracts for the Government and Municipalities be allowed to tender on Government graders' sample numbers of the season instead of sending in samples. (h) Payment of Wages: In the opinion of this Congress it is in the interests of workers and the commercial community that all wages should be paid weekly. (i) Standard Weights for Produce: The Executive Committee of the Association of Chambers reported that, after consultation with all Chambers of Commerce, it was recommended that when the Weights and Measures Bill is introduced to Parliament it should include a provision that all South African grown produce should be sold at per 100 lb. net weight, with the exception of articles of pastoral produce, such as wool, mohair, hide, skins, horns and feathers. The following motion of the Bethlehem Chamber was agreed to:—That all the produce should be quoted at per 100 lb. net throughout the Union. (j) Telephones: The following motion was agreed to:—That this Congress favours the further extension of the Government Telephone System, wherever practicable throughout the Union and views with satisfaction the proposals of the Government with regard to rural telephones, but considers it advisable that the facilities offered and the advantages of the telephone to the former should be more widely advertised. (k) Workmen's Lien: The Secretary to the Treasury informed the Congress that provision is being made in the Insolvency Bill, applying the principle of a lien to all classes of employees up to a fixed amount. (l) Powers of Attorney Given to Pass a Bond: The Congress reaffirmed its opinion that the Government should introduce legislation as soon as possible whereby every power of attorney given to pass a bond, when execution of the bond is stayed, must be signed in the presence of a Justice of the Peace, registered in the Deeds Office within fifteen days of signature, and gazetted. The delegates desire to record their appreciation of the hospitality extended to them by the various public bodies and institutions during their visit to Kimberley.



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Notes and News.

Union Land Settlement Co.

The subscription list for the Union Land Settlement Company, Ltd., closes this week, and applications should not be further delayed. Until the lists from the different centres are received, it will be impossible, of course, to judge the measure of public support accorded to the enterprise.

* * * *

Consolidated Langlaagte.

Consolidated Langlaagte profits and developments continue to be excellent, and it is certain that this company will be added to the list of dividend-paying concerns at an early date. The lower levels of the mine are reported to be opening up very satisfactorily, whilst in the western section of the property ore of very rich character is being exploited. The new 100 stamp mill and accessory plant continue to perform most efficient work and there were crushed last month 42,500 tons of ore for a total revenue of £58,196 and a profit of £22,547. This constitutes an advance of £2,000 on the August earning, and it is, of course, much better than the July result of £17,203, which was affected by the strike.

* * * *

Citrus and Mining Men.

Mr. R. A. Davis, Chief Horticulturist of the Department of Agriculture, is delivering a lecture on citrus and other fruit growing at the Grand National Hotel on Wednesday, 22nd Oct., at 8.15. The meeting is being held under the auspices of the Witwatersrand Agricultural Society and the Johannesburg Horticultural Society. Mr. Wallace Soutter will take the chair. It is known that many men on the mines are interested in the subject, and there should therefore be a good attendance at the lecture by practically the first authority on it in South Africa.

* * * *

A New River Digging.

Killarney, the newly-rushed digging, on the Harts River, lies on the Bechuanaland side of the border, and therefore falls under the diamond laws of the Cape Province. Although these laws require certain periods of time to elapse before proclamation, which has not yet been effected, there were about 500 whites and about 1,000 natives at work this week. All work is now stopped as from Thursday until the date of proclamation. On that date all the peggers will be lined up, and then each will rush to peg the claim he has decided on trying to secure. Claims are secured by the first legal pegger, irrespective of the former occupant of the rush period which was quite irregular and not according to law. The authorities had to deal, however, with a situation where great hardship would have resulted had work been peremptorily stopped, and they gave the rushers until Thursday to wash up their heaps. The central portion of the diggings presents a busy scene. The diggers are working like a colony of ants along the slopes of a diabase ridge, and it is there where the good finds were made which induced the rush. Inquiry among the diggers brings out the fact that even in the richest area there are blanks, and that the diamonds are mostly of small size, ½ to 1 or 2 carats, only one large stone, a 15¾ carats, having so far been found. Further afield abandoned claims proclaim the comparative poverty of the ground outside of the central area, and although a more important field evidently than Dievedraai further up, Killarney is not a place either for richness or extent, where multitudes of diggers can be expected to do well. In fact the present rush is not quite warranted and a good many are leaving disappointed. The digging lies in the hilly country known as the Maroquarie range, famous for its excellent stock veld. It is on the right bank of the Harts, and unlike the Dievedraai and Rietput diggings further up, where the diamonds are found in the recent gravels of the river, the Killarney diggings are on the gravels lying in them as pocket deposits in the sloping diabase surface.

* * * *

East Rand Mining Estates.

The East Rand Mining Estates, Ltd., is still marking time, hoping for a revival, so that its subsidiary companies may be able to raise further working capital. The company owns controlling interests in the Grootvlei Proprietary Mines and the Modderfontein Proprietary Mines, Limited, and possesses 21,146 acres in the Far Eastern Rand district, which will, no doubt, be taken in hand when times serve. Meanwhile, the company, owing to the interest on its loan of £60,850 and revenue from farms, is more than covering expenses. The actual profit for the twelve months ending June 30 was £3,725, after paying all expenses in Johannesburg and London, and the loss brought forward of £3,386 is wiped out, leaving a balance on the right side of £338. At the forthcoming meeting the Chairman probably will content himself by saying that faith in the properties is still as great as ever, but so long as capital is lacking a waiting policy must be adopted.

* * * *

Rose Deep, Ltd.

Owing to movement of ground and falls in workings north of No. 3 shaft at the Rose Deep it has been considered advisable temporarily to stop work in this section of the mine. It is not anticipated that there will be any reduction in mine tonnage on this account.

* * * *

Standard Bank Expansion.

The Standard Bank of South Africa was incorporated as a limited company rather more than fifty years ago as the Standard Bank of British South Africa. The first published balance sheet showed a paid-up capital of £72,000. The paid-up capital to-day is about a million and a half. The total liabilities to the public were £114,000, and to-day they are round about £24,000,000. The assets at the commencement totalled a little over £200,000. The last balance sheet gave nearly £29,000,000, after full provision for bad and doubtful debts and contingencies. In the course of the half century a reserve fund of nearly £2,000,000 has been accumulated. To quote a proverb recalled by the chairman at the last meeting, it is always in South Africa a case of feast or famine, and this bank's business, naturally, has reflected the ebb and flow of prosperity in the countries served by the institution. The last half-year has again been a prosperous one, and the dividend is raised by 1 per cent. per annum. Profits would appear to have increased by about £17,000. The extra dividend calls for another £7,800, premises depreciation absorbs an extra £15,000, and allowance must be made for a somewhat smaller amount brought into the accounts. The sum of £10,000 is added to the reserve, and promises soon to reach the round sum of £2,000,000. Not since April, 1908, has the company distributed such an excellent dividend as that now announced. An unsuccessful attempt was made at the last meeting to limit the reduction on the liability on the bank's shares, and to close the reserve fund at £2,000,000. The amount of the reserve fund must depend upon circumstances known only to the directors, and we hope that no further attempt will be made to interfere with the conservative policy of the directors.

* * * *

Warmbaths Coal.

The Warmbaths community are in the throes of no small excitement because of the potentialities involved in the recent discovery of coal in the neighbourhood of one of the Transvaal Estates and Development Company's farms. A seam of coal of the thickness mentioned is thought to mean the existence of an immense body of coal; while, if the quality is at all good, its proximity to the railway solves the problem of transport, in the sense that this problem will not act as a drawback in the way of competing with other mines. Not only is there the railway as a customer, but, with good coal obtainable on the spot, a new vista opens up regarding the various low grade tin mines that dot the whole length of the Rooiberg hills. The coal find is practically at the foot of the Rooiberg. As a matter of fact, coal has already been found about twenty miles from Warmbaths, about halfway to the Rooiberg tin mines, but concerning it no active steps have been taken for some reason or other, beyond prospecting shafts. A recent Rand visitor to Warmbaths, Mr. Alfred Lewis, questioned as to the coal prospects of the Bushveld, and the recent discovery near the Warmbaths, expressed the opinion that there are some 200 or more farms containing coal there, which at some future date will be turned into by-products and yield handsome returns to the fortunate owners, but that the fact is of no commercial value at present.

* * * *

Greig Diamonds.

Since the article on Greig Diamonds appeared in a recent issue increased interest has been taken in the venture. The secretary of the Greig Diamond Syndicate now informs us that the manager, Mr. William Murray, reports under date the 6th instant, as follows:—I have completed the standards for the intermediate shafting. Feed elevator will be completed by Tuesday, and I hope to have wet elevator well in hand by the end of the week. The plant to be erected by Tarry's is expected next week, and if it arrives all should be ready for washing on a large scale by the middle of November. Meanwhile gravel is being extracted, and plenty should be ready to keep the pan constantly going when same is started.

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Victoria Falls Power Meeting.

At the recent meeting of the Victoria Falls and Transvaal Power Company, the Marquis of Winchester, who presided, spoke very optimistically of the future. Assuming the maintenance of the present level of profits per unit of plant, and that the mines take the amount of power they have applied for, it is possible, the Chairman considers, that in respect of 1916 the Preference shareholders will receive the maximum dividend of 10 per cent., to which they are entitled, while 4 per cent. should be forthcoming on the Ordinary capital. As the Preference dividend is at present in arrear as from 1911, this means that approximately 28 per cent. will be paid during the next four years on this class of capital if the Chairman's forecast is fulfilled.

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Coal and the Power Companies.

An interesting reference to the effect on Transvaal collieries of the advent of the big power companies was made by the Marquis of Winchester at the annual meeting of the Victoria Falls Power Company in London. He showed that the company's operations were viewed by the Transvaal Coal Owners' Association and the Government of the Transvaal, who then controlled the railways, with considerable apprehension. The system adopted in the company's boiler plants of automatic stokers enables them to advantageously employ the smaller and least valuable class of coal. The coalowners feared that the general consumption would fall off. At that time the mining companies were the chief consumers of what is known as round coal. The small coal was more or less lost to the collieries; in fact, it cost them money to dispose of it on their dump heaps. By selling the Power Company that coal they have been enabled to dispose of their round coal under more satisfactory conditions. Brakpan, the first station, was started in September, 1908. The coal output for the twelve months ending September 30 of that year was 2,942,000 tons, the output for the twelve months ending September 30, 1912, was 4,592,000 tons, or an increase of 1,650,000 tons. The following are the figures for the output for the Transvaal alone:—For the month of September, 1908, 250,000 tons; for the month of September, 1912, 392,000 tons; increase, 142,000 tons. Again, the increase of coal traffic over the railway system exclusively in the Transvaal for the year 1911 shows an increase over that of 1910 of 388,095 tons. "I think, therefore," the Chairman concluded, "that we can claim to have done no harm to the coal-mining industry of the Transvaal."

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Electric Power Supply.

At the recent meeting of the Victoria Falls Company in London, Mr. A. E. Hadley, the managing director, said that the total power supplied along the fifty miles of reef amounted to 140,000 horse-power, and the further business in sight represented an increase of 40 per cent. With the amount of energy already being sold the enterprise ranked as the largest supply company in the British Empire, and it was exceeded—and that but slightly—by not more than two or three in the world. After carefully reviewing the knowledge acquired in the last five years under the conditions existing on the reef, and after examining the practice and installations employed in the largest American plants, he was able to say that the company's system embodied the best modern experience in the methods of supplying power on a large scale, and were they about to lay out the system again, having the benefit of the experience gained since the stations and lay-out were designed, they would not make any material modifications.

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Three Months at Rooiberg.

The report of the Rooiberg Mineral Development Company for the quarter ending September 30th shows that the total profit earned during the three months was £16,777, with an average price of £188 17s. 4d. per ton for tin. The ten stamps dealt with 10,459 short tons, producing 322 long tons of concentrates, of middlings and slimes, the accumulated tonnage not treated at the end of the quarter was 27,222 short tons having an average assay value of 2·5 per cent. metallic tin. During the quarter an amount of £3,662 10s. 4d. was expended on capital works, of which £3,025 was incurred in the erection of additional slimes plant. This additional plant is now in commission and is giving good results. At the intermediate working, shaft No. 32, important pockets of high grade ore have been disclosed, whilst at the camp workings a flat pocket has been discovered from which high grade ore is now being grassed. There has been a substantial addition to the "ore at grass" during the quarter. In order that the plant may be tested with mine ore only, it was decided to work for one month exclusively with mine ore. This test is being carried out during the month of October, and the results will therefore be abnormal, in that no accumulated sands and slimes will be re-treated.

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Skilled Labour "So-Called."

In the course of an article on the Rand in 1912, recently contributed to the Michigan College of Mines Alumnus, Mr. W. L. Honnold writes significantly:—"The native labour situation is probably more satisfactory than ever before and is in the way of further improvement, partly through the better organization, recently effected, and partly through the wider use of machine drills. In the latter connection it is interesting to note that the number in use has increased by about 57 per cent. within the last two years, a total of 5,634 drills now being employed. Unfortunately, the white labour position is not so satisfactory, this country like most others having now to contend against both shortage and inefficiency. This difficulty will probably disappear when it is recognised, as it inevitably must be sooner or later, that the existing prejudice against the employment of natives of superior capacity on certain so-called skilled labour is unreasonable and inadvisable under the circumstances. The prospect in this connection, however, is too vague to be reckoned on at present." Since these words were penned by Mr. Honnold many things have happened to render the prospect he pictures less vague.

Jagersfontein.

The interim dividend of 5s. per share declared by the Jagersfontein Company recently is regarded as below expectations. For the two preceding corresponding half-years, the dividend has been at the rate of 6s. With good prices current for diamonds, and the company having no necessity to repeat expenditure of exceptional character at expense of profits with a view to increase quantity of blue ground, a reversion to the 1910-11 rates of distribution was looked for. At the meeting on June 20 the Chairman said he could with every confidence predict that the shareholders would receive the normal dividend of 12s. per share during the current year. The present announcement is, of course, only an interim dividend; it is also necessary to bear in mind that cautious policy is desirable in view of the slight shrinkage in yield per load shown in the recent past. Doubtless the final dividend for the year will justify the Chairman's predictions.

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A Big Engineering Project.

In our last issue there appeared a full account of the scheme now adopted by the Rand Water Board for obtaining additional supplies, to be drawn from the Vaal River. Engineers and others, however, will be interested in the following details of the project, which we take from the report of Mr. Ingham, Engineer to the Board:—A barrage will be constructed across the Vaal River at a point about 26 miles below Vereeniging and this will impound 10,169 million gallons with gates 23 ft. 3 in. deep, or 12,325 million gallons with gates 25 ft. deep. The figures mentioned above are the available quantities only. The reservoir will extend up the Vaal River for a distance of 41·47 miles, or about 15½ miles above Vereeniging. The catchment area above the barrage site will be 17,199 square miles. The barrage will be composed of 36 gates, 30 ft. wide and 23 ft. 3 in. deep, and these gates have been designed so that there will be a clearance of 7 ft. 6 in. between the highest flood level and the underside of the gate when fully raised. The water will be pumped against a head of 80 ft. from the Vaal River at a point 1·5 miles below the Vereeniging Railway Bridge and will be delivered through a 33 inch main to the main pumping station 1,555 yards away. On arriving at the main station, the water will pass into a series of large tanks where sulphate of alumina will be added to precipitate the finely divided silt carried by the Vaal River. After sufficient time has been allowed for sedimentation, the water will gravitate through mechanical filters where the remaining fine silt will be removed. The filtered water will then pass into a small reservoir under the filter house floor, and from there will be raised into two clear water tanks which contain 5 million gallons each. From these tanks the water will be raised by a modern pumping plant against a head of 460 ft. through 26½ miles of main composed of 33 and 30 inch steel pipes to a new service reservoir at Zwartkopjes, containing 5 million gallons. The present pumping plant at Zwartkopjes will be utilised as far as possible for raising the water through a main composed of 27, 30 and 33 inch pipes, 5·74 miles in length, to the proposed reservoir on Turffontein Hill which will contain 5 million gallons, against a head of 1,020 ft. It will, however, be necessary to instal two new boilers and two pumping units in the present building to cope with the additional supply and have sufficient stand-by plant in case of breakdown. From the Turffontein reservoir, the water will gravitate through a main 3·67 miles in length, composed of 30 and 33 inch pipes, to the Village Pumping Station, and beyond that station through 7·017 miles of 24 inch main to the new reservoir on Signal Hill at Germiston.

TOPICS OF THE WEEK.

THE DEPARTMENT OF MINES AND INDUSTRIES.

The Minister of Mines and the permanent heads of his department have been particularly busy of late. Thus, while Mr. Malan and Mr. Kotze have been touring the north-eastern mining fields and listening to their many grievances, the Secretary for Mines, the Chief Inspector, and their staffs have been busy preparing the new legislation that is to remedy all our industrial evils. Of Mr. Malan's tour, it may be said that it produced little that was new or novel in the way of wants or grievances. The Pilgrims Rest and Sabie people have been crying out for some alleviation of the burden of claim licences ever since the present Gold Law was passed. Mr. Malan's sympathetic interest in the request is none the less commendable because he could not fail to have known all about it already. Neither is there anything surprising in the request for customs mills and direct financial assistance to the "small man." These are now stereotyped demands from the "outside districts," and Mr. Malan accorded them the usual stereotyped answers. Incidentally, he made it known that the Government was going to help the French Bobs financially, though, doubtless, only on "strict business lines." We might commend to Mr. Malan's notice the fact that the United States this year has set aside £150,000 for the development of mining, and the annual report of the Victorian Secretary for Mines to hand this week, where under the head of "Government Batteries," it is stated that 25 plants had been erected by the department for testing small quantities of ore for miners and inspectors. During the year 2,887 tons were treated for the satisfactory yield of 2,490½ ozs. gold, showing an average per ton of 17 dwts. By the cyanidation process, 881,306 tons of tailings from old lode and alluvial mines and at existing batteries were treated for a yield of 55,470 ozs., valued at £200,277, or 4s. 6d. per ton. With the deputations who waited upon Mr. Malan, we are not satisfied that making a few roads and bridges, and lending a little money on "strict business lines" is fulfilling the whole duty of the State to the "small man" in mining.

The Secretary for Mines has been no less active than his chief. A new Lien Bill and a new Factories Bill, the main provisions of which have been published, are two of the several measures dealing with matters industrial that are now in course of preparation. The consolidation of mine benefits, the Industrial Disputes Prevention Act Amendment, and the control of trade unions, are others even more important that are in hand. The new Mine Benefit Society Bill will make provision for the governing of the societies by legislation, but the question as to whether the benefit societies should be consolidated will be left to be decided by a ballot of the men themselves. In the new measure to amend the Industrial Disputes Act power is reserved to the Government to take active interest and interference in a dispute, independent of the parties to that difference. Instead of being spectators of the development of any matter that has led to friction between employers and employees, the Government will at once be able to step in and take an active part in the adjustment of whatever grievances may, or may seem to, exist. The mere mention of this big programme of new legislation indicates the volume and importance of the work upon which the Department is now engaged. Only by the removal of the Secretary for Mines to the Rand has the work been possible at all, and the obvious conclusion is that if the business of the Department is to be conducted with the minimum of delay and friction its permanent head should have his permanent residence here. The head of the Mines Department was, of course, transferred to Pretoria in the bad old days when the then Minister of Mines, now the Judge President, suspected every Government servant of being in the pay of the capitalists. Now that that unjust suspicion has been proved to be groundless, there is really no reason whatever left for retaining in Pretoria the administrative head of the Department that has more to do with the Rand than any other. The vast amount of trouble and red tape that would be saved in correspondence and communication between the Pretoria and Johannesburg offices can be imagined. It may be argued that since the Department now embraces "industries" other than agriculture, it would be better placed in the half-capital. But Johannesburg is the centre of the many industries subsidiary to mining and far more than Pretoria it is a suitable centre for fostering the growth of the infant manufacturing activities. It is to be hoped, therefore that the Minister will mark his return to Pretoria and practical commonsense by re-transferring the Secretary for Mines to the chief and natural scene of his labour and interests.

SHOULD THE CONTRACT SYSTEM BE ABOLISHED?

It is an open secret that the Department of Mines is now endeavouring to persuade the mines to abolish the contract system of miners' payment on the Rand. Rightly or wrongly, the Department has got hold of the idea that the system is responsible for much of the disease and accidents on the mines, and in this attitude seems to have the support of the Miners' Union. Just six years ago, after the first strike, the whole question of method in making payments was very fully threshed out in our columns, and though the controversy between contract system and day's pay plus bonus seemed to favour the latter, the hold of the contract system has strengthened rather than otherwise since then. An attempt, it will be remembered, was made after the first strike to introduce the day's pay cum bonus system exclusively on several mines, and even on whole groups of mines, but gradually the old system returned, and with the State regulation of contracts embodied in the new mining law of last year which involved a stereotyped agreement form on all the mines, the old system regained its former sway. That it has many merits is obvious enough, though whether these are not outweighed by its demerits is a moot point, upon which some further light is desirable. The case against it has been well expressed by some doctors, labour leaders, and other reformers. Thus, the Minority Report of the New Zealand Mines Commission, written by the two Labour members of the Commission, has a condemnation of the contract system and night shift. *Inter alia*, that report said:—Although this question of the contract system was mentioned in the findings of the British Commission and recommended for consideration, we are basing our conclusions in this report upon the evidence gathered by the present Commission, which evidence undoubtedly constitutes a strong indictment of the methods in voguè. All the witnesses on behalf of the workmen admitted before the Commission that the contract work and night shift were responsbile for bad health and the major portion of the accidents, notwithstanding that their earnings are a little larger under the contract system than under the day-wage system. Knowing, as the miner does, that his occupation is hazardous, dangerous and unhealthy, in order to launch out in some other avenue of employment, he endeavours to try and make a big cheque, and takes full advantage of the time spent underground to accomplish the object in view. Dr. Conlon, in giving evidence before the Commission, said: "The contractors are the men who suffer most; the good miners always go under quicker." In answer to a question by the Chairman on the subject, he further stated that the more the men exerted themselves the more likely they were to get the disease, and "the men who worked hard frequently go away from the district because their health is affected. A man cannot work underground and extend himself as he can on the surface. If you look through a list of the men who have suffered from the disease you will find that they are the men who worked as contractors." Continuing his evidence, in reply to a Commissioner, he said that the work lowers a man's vitality, and he runs into places without waiting for the dust to settle, thus taking bigger risks; further, that the average age of men dying in the Reefton district, during a period of twelve years and a half, would probably work out at fifty-five. Dr. Thomas

Oliver, F.R.C.P., in his work on "Diseases of Occupation," quotes Dr. H. Bremridge, who is on the medical staff of the Kolar Goldfield, India, as follows:—

> In the Kolar gold mines there [illegible] employed [illegible] rock is hard. Dr. Bremridge went to India expecting to meet with miners' phthisis, but failed to find evidence of the disease except in men who came from the Transvaal. He found that the native and white men kept good health. He attributes the freedom from miners' phthisis partly to the fact that the men take more leisure, and are not so eager to make a fortune as the miners in the Transvaal.
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> Dr. Oliver also says: The miners on the Rand are paid for piece work; they are impatient, and as they prefer to run risks some persons may say the mines are not altogether to blame. They rush back too soon after blasting to recommence work in the particular part of the mine, the air of which contains a slight excess ot CO_2 when the explosion has been complete, and always a large quantity of dust. They neither allow the smoke to clear away nor the dust to settle.

These circumstances show the desire on the part of the men to run these risks in order to earn one or two shillings a day more, not only in this country, but in every other country where this system is in operation; and we are of opinion that the system is also responsible for the bad distribution of air, as the men do not seem to give any consideration to the ventilation, in case doing so may impede them in their work. They push on for footage and tonnage, which determines the amount of wages they receive, and thereby assist the companies in evading the provision of adequate ventilation. In many cases it is more economical for the companies to give a prize to the men than establish proper ventilation. We contend that any system which embraces a decoy for men to run risks underground—returning too soon after firing, etc.—is dangerous to health, limb and life. Circumstances show that the broken rock tends, after blasting, to imprison poisonous gases. The subsequent liberation of these becomes a source of danger when the work is carried on before the air of that vicinity is perfectly clear from dust and all poisonous gases. We have observed that accidents are far more numerous in the districts where mining is carried on under the contract system than on day wages. This was also observed by Mr. Coutts, the late Inspector of Mines for the Hauraki district. In our opinion this statement by Mr. Coutts (who had had years of experience) amply proves that the contract men do their work more hurriedly, and consequently more risk is incurred, and at the same time shows that more accidents happened for the last six months than had been the case for the previous ten years, considering the ten years mentioned was worked on the day-wage system. These are not the only grounds, however, on which the system is assailed. Mr. James Chilton, a recent critic of the industry, has stated before the Chemical, Metallurgical, and Mining Society that the restlessness of the Rand miner is largely due to the lack of uniformity in the wage system that prevails here. He described the former contract system on the mines as a never-failing source of wonder and astonishment. How was it, he asked, that two miners of equal ability, on the same mine, under similar conditions, differ so widely at the end of the month, one receiving sixty pounds, and the other perhaps a cheque for 8s.? In admitting that cases like these do occur, it is by no means admitted that the result is obtained by withholding any part of the miner's legal earnings. Managers and surveyors are as honest as any other section of the community, and the frequent charges of peculation brought against them are very seldom substantiated, yet with perfectly honest officials these incidents often happen. The miner receiving the small cheque naturally seeks fresh fields; no protests of innocence, no expression of polite regret; no stope plan or squared paper diagram, will convince him that he has received just treatment. The satisfied miner works on till his cheque comes down, and he departs also. Mining officials dread the end of the month, for it invariably means a new set of men, with greater anxiety, and more accidents. The trouble is that there are too many large wage cheques and too many small ones. Mining conditions in the stopes and drives change rapidly from day to day, reef bodies widen or become narrower, and stoping widths vary as the ore body changes, foot wall and hanging parting become more distinct or disappear altogether. Some days the ore is hard to drill, on others it is bad to break, faults, dykes and fracture planes make their appearance and are passed over. If on measuring day the miner comes out well, he has worked for it, if badly, he is simply unlucky. We quote from Mr. Chilton: "There are working places in many of our mines where men never have and never will make a living wage at the ruling prices, yet they are never changed, and month after month men sign on and leave with unfailing regularity. Where the conditions are uniform, and free from faults and dykes, a miner can make good wages consistently month after month, but unfortunately these places are not plentiful. The curse of change, with its sequel of accident, will not be stayed until we deal with the system of payment underground. Let a fair average wage be agreed upon, and any miner making ten per cent. above that standard for three consecutive months should suffer such reductions as would bring him down to the average standard wage; on the other hand, a miner working where is is unable to make the average wage should receive an increase sufficient to bring him up to the standard wage. In this way the evils of high and low wages would be successfully resisted, and our wandering miners would cease to roam, and would identify themselves more strongly with the fortunes of their particular mines." It is only fair to state that these criticisms were written before the introduction of the amended and improved contract form now in use. How far they still hold good and to what extent the incidence of disease and accidents can be placed at the door of the contract system are points which will be considered at some length in our next issue.

TO SETTLE STRIKES.

The debate of the Unionist Party Club, initiated recently by Sir Lionel Phillips on the question of industrial disputes, drew, last week, from Mr. Patrick Duncan, another notable contribution. Briefly, he advocates Conciliation Boards, and amendments to the present Transvaal Industrial Disputes Act. At the Church of England Synod this week, the Bishop of Pretoria and Mr. Feetham favoured the same course. In this connection it is noteworthy that the mail papers show that in New Zealand, as in South Africa, a struggle is in progress between the Syndicalist, whose only remedy for the ills, real or alleged, from which the working classes suffer, is the obliteration of private enterprise: and the economic reformer, who is anxious to probe the causes of labour unrest to the bottom, and to devise some more rational and less extreme means of preventing or settling disputes between capital and labour than a strike or a lock-out. A battle between the advocates of these opposing views took place at the recent Labour Congress, in that country, and the extremists won a nominal victory, but only at the expense of disruption in the labour ranks. Meanwhile, Mr. Massey's Government is endeavouring to think out legislation with a double purpose: on the one hand, to improve the existing labour legislation, and, on the other hand, to strengthen the law against the new-fangled excesses of aggressive Syndicalism. With the former object in view the New Zealand Government has given careful consideration to the Conciliation and Arbitration Act. It is proposed to effect a number of amendments in the mechanism of the Act. The existing law applies only to disputes affecting registered Unions of workers, and of recent years the extremists have done their best to induce the various Unions to decline registration. The new Act will include provisions which is is hoped "will enable all parties to all industrial disputes to arrive at a peaceable settlement of their difficulties, and in this way, so far as possible, to prevent strikes and lock-outs from taking place." The Government of the Union of South Africa is on the same quest: and with the assistance of the Economic Commission we may hope that some mechanism suited to the conditions of South Africa may be devised. Meanwhile debates such as that of the Church Synod and the Unionist Party Club cannot but have an excellent effect in enlightening public opinion in this country on modern labour problems. As a writer in the latest number of the "Round Table" puts it, hitherto the only labour question South Africa had any familiarity with was the shortage of native labour.

PRESENT POSITION OF ELECTRIC BLASTING ON THE RAND.

Is it an Essential Measure or not?—A Qualified Success—Value of Blasting Gangs Demonstrated.

[By B. C. Gullachsen, M.I.M.E.]

Now that the electric blasting on the Meyer and Charlton has passed beyond the experimental stage, and has to a great extent proved its applicability to the conditions of mining on the Rand, it seems an opportune time for considering how far the success may lead to its becoming generally adopted on the mines of the Witwatersrand. The chief idea underlying the introduction of electric blasting is, of course, that by its use we should secure healthier conditions underground, and to a great extent eliminate the danger of those working underground contracting miners' phthisis. For this reason great credit is due to the Albu group for having gone to the expense and trouble of taking the matter in hand, giving it a fair trial, and proving it a success. The great advantage claimed for electric blasting is, that all the men and natives can be out of the mine before blasting takes place, and thus prevent them from being underground at the time when most dust and noxious gases are present in the air. Another advantage claimed is that there will be a saving of time and that therefore a longer period of time will be possible for drilling. This, in the opinion of the writer, is problematic, as there is every reason to suppose that the charging up of holes for electric blasting will occupy the mine just as long a time as in the case of ordinary fuse charges, in fact a longer time seems more than likely, seeing that as well as charging up the holes all the wires have to be connected. When special blasting gangs are employed the miner will have a little extra time, as it will only be necessary to charge up immediately before the end of his shift. Lashing gangs will also be able to remain in the stopes for a slightly longer time. Misfires, it is claimed, will be entirely eliminated, but certainly at the present stage this is not the case; misfires do occur at the Meyer and Charlton. Still one must admit that this is chiefly caused by the use of an old type of electric fuse, and by carelessness in charging up, the trouble being that in doing so the fuse may be pulled out of the electric ignition cap, or the wires nipped and broken. With the newer forms of fuse, a stronger connection, and greater care and experience in charging up, no doubt the risk of misfires should be overcome. Time is often lost after charging up, when the circuit is found to be broken, due to poor connections, or more often a break in the detonator circuit. To avoid this each detonator should be tested before use with a galvanometer. This, in the case of instantaneous fuse, should be done on the surface, the wires being passed through a wooden partition, thus separating the detonators from the person testing them, as cases have occurred of even the small current of a galvanometer detonating the cap. Now as to the future of electric blasting on the Rand. Its ardent supporters tell us that the Mines Regulation Act should make it compulsory. This, in the writer's opinion, is absurd, as anyone knowing the mines of the Rand can call to mind many mines where the chief and real practical advantage of electric blasting—namely, the avoiding of the men and natives being present in the dust and fumes caused by blasting—does not necessarily follow its adoption. With the present method of blasting there are many mines in which the men on lighting up are, on walking to the station, immediately leaving the results of blasting behind them, and are not at any time present in the fumes and dust caused by the blasting. Why, therefore, should these mines adopt electric blasting? Such a condition of affairs as mentioned above is by no means an isolated instance, as at nearly all downcast shafts such is the case. On the other hand there are shafts with which the writer is acquainted, where, the ventilation being upcast, the dust and fumes directly after blasting sweep out on to the stations where the men and natives may have to wait exposed to them for some considerable time, before being taken to the surface. On such mines electric blasting would undoubtedly prove beneficial, and one might even go as far as to say, should be made compulsory. At the present time a blasting gang is employed on the Meyer and Charlton to go round and test the connections for each stope, and after seeing all is in order, firing the charges from switches on the stations and surface. Why should not something similar be done in the case of ordinary fuse blasting? What I wish to point out is this. Why go to the expense and trouble of installing electric blasting if the same results can be achieved by simpler and cheaper methods? If blasting gangs were employed in connection with the ordinary fuse blasting, all that would be necessary would be that each miner would charge up his holes in the usual way and after all the men and natives have reached the surface the blasting gang would light up the charges. One white man in most cases could take each level and have one native for each stope, who after lighting up would immediately proceed to the station where the skip would be in readiness to take them to the surface without delay. Of course in the case of mines blasting twice in the twenty-four hours, which on the majority of mines is the case, there is a great objection to employing blasting gangs to blast after all the men and natives are out of the mine, as it would mean further reducing the short period—at the best only about four hours—which elapses between one shift blasting and the next commencing work. To summarise the present position of electric blasting, we may say that the blasting by electricity of both development places and stopes by the use of instantaneous and delayed fuses has been proved a success. Misfires to a great extent can be eliminated. In the case of upcast shafts where the men are at present exposed to the products of blasting, electric blasting is desirable. Where blasting gangs are employed slightly longer periods of time would be possible for drilling and lashing. On the other hand, electric blasting means an increase of cost. In nearly all downcast shafts its chief advantage does not hold good, and therefore it is unnecessary. With blasting gangs it seems possible that the same results could be achieved without the use of electric blasting. The above remarks are necessarily brief, and no doubt there remains much to be said pro and con.

Goerz Group.

Results of operations of the crushing mines comprising the Goerz Group for the month of September, 1913:—

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated ...	100	—	15,170	£11,804	£3,111
Princess Estate	60	5	21,500	26,754	1,508
Geduld Proprietary ...	60	5	20,050	29,342	6,508
	220	10	56,720	£67,900	£11,127

Prospecting for tin has recently been carried on on the farm Plaatdoorn No. 1964, in the Pietersburg district. A syndicate was formed, consisting of Messrs. Mentz, M. Marcus, J. H. Munnik, A. J. Roos, J. F. Naude, Betz, M. Miller, Simpson and Wolf, and a prospector was sent out about six weeks ago. A report has now been received that very rich tin has been discovered, which is said by reliable authority to eclipse anything yet found. As the work of developing proceeds, its continuity will be better known, before which it will be impossible to make any definite statement.

THE "STATE MINES" PLANT.

100 Stamps, 10 Tube Mills, and Butters' Filters—Brown Agitators to be Installed—Plans for Indefinite Extension—The Rand's Latest Equipment—Work of Excavating Begins—To Crush Next Year.

Constructional operations at the Government Gold Mining Areas property on Modderfontein are just commencing. The contract for the excavations has been let, the centre lines are being laid out, and in a very short time the actual work of installation should commence.

Similarity to Van Ryn Deep Equipment.

The "State Mines" plant will in most essential details be a replica of the equipment at the Van Ryn Deep, which, in turn, was modelled, in so far as battery, tube mills, and sand plants are concerned, on the lines of the Consolidated Langlaagte installation. The Van Ryn Deep plant, it will be recalled, commenced crushing about the middle of the year and is achieving most efficient work. The State Mines battery and accessory reduction and treatment machinery may be expected to achieve equally satisfactory results. The first section of the plant will have a capacity of 50,000 tons, and it is expected that a plant will be operating on this basis of crushing before the end of 1914.

The Extension Consideration.

Having regard to the enormous mining area controlled by the company, the equipment will naturally be laid out with a view to expansion. A further stage in the milling scheme will be attained when plant of 100,000 tons per month capacity is installed, but beyond this there will, doubtless, be further extension, to what limit it is impossible at this early stage in the history of the company to say. Everything, however, indicates that in a few years' time the Government Areas property on Modderfontein will be capable of supplying a much larger equipment than that tentatively agreed on as the second stage in the milling scheme, and of keeping such an installation at work for a considerable number of years. Extension to a very considerable degree—if not indeed almost indefinite extension—has then to be borne in mind by the engineering department of the House of Barnato as a primary consideration in connection with the planning of any milling projects for the Modderfontein State Mines. The extent of the mineralised area of the property may be realised when it is stated that the distance around its boundaries amounts to no less than ten miles. In the northern shafts the average dip of the reefs indicated by work done to date is in the neighbourhood of 14 degrees. In the south-east shaft the reef lies much flatter and it appears likely that there is a considerable flattening tendency. More work will, of course, have to be done before the average dip throughout the mine can be approximately determined. It may here, however, be stated that at an average dip of 11 degrees the 2,633 claims, on a basis of not more than three feet of reef, would, after a 10 per cent. reduction for faults and broken ground, represent nearly forty million tons of ore.

The Battery.

The first essential point of difference between the State Mines equipment and that of the Van Ryn Deep is that the former will include a back to back battery, whereas the stamps at Langlaagte and the Van Ryn Deep are arranged on the single row principle. There will thus, too, be a different arrangement for delivery of mill pulp to the tube mills. A battery of back to back pattern naturally adapts itself to extension more readily than a single row equipment, and this, as already stated, has had to be a dominant consideration in regard to the Modderfontein property. It has been decided to erect the plant close to the south-east shaft. The permanent offices and workshops are located there and the situation generally accommodates itself to concentration of work around this point. The shafts are all connected up by railway lines, and locomotives will transport ore to the mill in 40-ton hopper trucks, as are in use at the Van Ryn Deep, Main Reef West, and Randfontein Central, etc. The first section of the equipment will consist of a battery of 100 stamps with sand and Butters' vacuum filter slime plants. The stamps will have a falling weight when new of 2,000 lbs. apiece and will thus be about 80 lbs. heavier than those of the Van Ryn Deep. The extra weight will be secured by an increase in the size of the heads and shoes.

Tube Mills.

The proportion of tube mills to stamps will be the same as at the Van Ryn Deep and the Consolidated Langlaagte, namely, one tube mill to ten stamps. The ten tubes of the State Mines will each be of standard 16 ft. 6 ins. by 6 ft. size, as are those in the Van Ryn Deep, Consolidated Langlaagte and Witwatersrand G.M. Company's plants. At the Van Ryn Deep the mill pulp gravitates direct from the mortar boxes straight into the tube mill cones, but at the State Mines the pulp will gravitate from the boxes to the coarse sand pumps with a view to saving the cost of excavating which the former arrangement entails.

Sand and Slime Plants.

The sand plant will be identical in design to that of the Van Ryn Deep. Classification will be the same, and there will be three sand-collecting tanks, each 56 ft. by 10 ft., with Butters' distributors and eight treatment tanks, each 56 ft. by 11 ft., with Blaisdell distributor.

The slime plant will include a Butters' vacuum filter equipment (392 leaves) of pumping type—the filter plant at the Van Ryn Deep is of gravity pattern. There will be six slime collectors, each 70 ft. by 12 ft., with 7 ft. 6 in. cones and nine Brown agitator tanks of standard 45 ft. by 15 ft. size. The main crusher station will be at the south-east shaft. The equipment will be electrically operated (one motor to ten stamps), and the arrangements for discharge of residues to sand dump in trucks will be the same as at the Van Ryn Deep. The foregoing describes the outstanding features of the Rand's newest equipment. The progress of construction will naturally be followed with the keenest interest, and as the work proceeds we shall hope to illustrate the progress attained by photographs. We hope, too, at an early date to reproduce a diagram showing in graphic form the general arrangement of the plant.

A Sheba Dividend.

The secretaries write:—The following cable has been received by us from our London office:—"Board of directors have declared a dividend of 5 per cent. on account of current year, payable on 15th November to the shareholders on the books 23rd October."

We have received a copy of the special "Rosh Hashona" Annual of the *S.A. Jewish Chronicle*. The issue marks an interesting epoch not only in Jewish journalism in South Africa, but also in high-class productions in this country, and its producers are certainly entitled to great credit.

Last week Mr. Malan formally started the battery of the C.B.M. Syndicate at Ledophine, which is run by electric power drawn from the T.G.M.E.'s power scheme at Belvedere. In starting the battery Mr. Malan wished Capt. Cornwall and Messrs. Burnham and Munro every success in their venture, and trusted that their five years' work prospecting and developing the mine would be richly rewarded, and would stand as a permanent monument to their energy, enterprise and initiative.

POSITION AT THE SHEBA.

Excellent Developments in the Intombi Section—Equipment Increased—Some Recent Returns.

The declaration of a dividend by the Sheba Gold Mining Company tends to again direct attention to the affairs of this company, which was once the most famous gold mine in the Transvaal. The dividend now announced is of 5 per cent., which, on a capital of £269,738, represents the distribution of a sum of £13,487, and is in respect of the current year's operations. Dividends totalling 17½ per cent. were declared in respect of the past year's operations—June 30, 1912, to June 30, 1913—and the outlook for the payment of a similar amount during the current twelve months is decidedly hopeful as will be seen from the following table, which states the quantities of ore crushed, working costs, and working profits since January last:—

1913.	Stamps working	Tons milled.	Output £	per ton. s.	d.	Working costs £	per ton s.	d.	Profit £	per ton s.	d.
January	60	4.850	£13,877	57	3	£8,559	35	4	£5,319	21	11
February	65	5,500	12,586	45	9	8,458	30	9	4,128	15	[illegible]
March	60	6,220	12,811	41	2	8,566	27	[illegible]	4,246	13	[illegible]
April	60	6,340	13,499	42	2	8,734	[illegible]	7	4,743	15	0
May	60	6,370	13,771	43	3	8,991	23	3	4,779	15	[illegible]
June	60	6,550	13,444	41	7	9,018	27	6	4,427	13	[illegible]
July	65	6,500	13,758	41	2	9,353	28	[illegible]	[illegible]	[illegible]	[illegible]
August	65	6.560	13,975	42	7	9,597	29	3	4,377	13	[illegible]
September		6,320							3,930		

Last month's profit, it will be noted, was the lowest recorded for some considerable time, but, having regard to the manner in which the mine is opening up, particularly in the Intombi section, it seems reasonable to suppose that better monthly returns can and will be recorded.

The Intombi Block.

A feature of the development work undertaken during recent months has been the gratifying manner in which the Intombi block has opened up. Barberton country is hilly and rugged, and the "Intombi fracture," as it is termed lies about 500 feet above the collar of the Zwartkopje shaft—the main section of the property. Up to the end of last year the Intombi shaft had been sunk over 400 feet and profitable values had been disclosed as a result of this sinking on the third, fourth, fifth and seventh levels. The driving at these points had results which enabled the management to include in the payable ore reserves 20,000 tons of Intombi ore which had an average assay value of 10 dwts. over a stoping width.

Ore Reserves.

The ore reserves in the entire Sheba property at the end of June last were estimated at about 110,000 tons, as compared with about 127,000 tons at the end of the previous June. Principal contraction is shown in the Zwartkopje block, which at the end of June was estimated to contain about 70,000 tons of developed ore as against 105,000 tons twelve months previously. The estimated screen value for ore from this section of the mine remained the same at between 12 and 15 dwts. The reserves in the Insimbi and Southern Cross sections were neither increased nor decreased as regards both quantity and value during the twelve months ended with June last, but there was a marked improvement in the tonnage in the Intombi block—an advance of 18,000 tons accompanied by an increase of over 2 dwts. per ton in estimated screen value.

The Zwartkopje Section.

The Zwartkopje is at present the most important contributor of ore. In this section gold was discovered in a quarry some years ago, and recently this portion of the proposition has received chief attention from the management. The outstanding feature of the Zwartzkopje block may be described as a chert bar dipping at about 80 degrees. In places this bar is highly mineralised. It is underlaid by a lenticular fracture in schist, and it is on this body that for some time past development has been proceeding. In places this body carries very high values, especially where the quartz comes in contact with the chert bar. Fresh levels have been cut from the old shaft, and at several points these have exposed ore of highly profitable character. During the past twelve months the Zwartzkopje section has contributed 95 per cent. or more of the ore mined in the various blocks of the proposition and the decline in ore reserves in this section of the mine may have given rise to a little anxiety in some quarters. But it seems to us the excellent results obtained in the Intombi block compensate, or compensate to a material degree, for the decrease in the reserves of the Zwartzkopje block.

Increasing the Equipment.

Whilst active development of the mine has been proceeding, the management has not been slow in recognising that the erection of certain additional plant at the surface is advisable. In this connection it is interesting to note that within the past few months a further six Wilfley concentrating tables and a new roasting furnace to deal with concentrates have been added to the metallurgical equipment. It has been decided to further improve the plant by the erection of a 750 h.p. steam engine alongside the railway station at Avoca. This engine will be installed on account of the unreliability of the rainfall at the Queen's River power station, and the difficulty and expense entailed in delivering steam coal to the mine reduction plant. The Sheba, it seems, after a lengthy period of poor returns, has become an eminently profitable mine again, and the present active policy of the management encourages one in the hope that the company will continue to earn profits for some considerable time to come.

Eastern Rand Geology.

To the Editor, *South African Mining Journal.*

Sir,—Under the heading "Reef Conditions on the Eastern Witwatersrand," alluding to Mr. Humphreys' claims lying between Benoni and Boksburg, in your last issue, you say that the majority of geologists are agreed that the auriferous conglomerates (?) of the East Rand Proprietary may be correlated with the reefs worked in the Kleinfontein. If that is the case, kindly allow me to inform those gentlemen that they are utterly wrong, as any sampler or miner will confirm, who has worked on the two properties with his eyes open. Geologists in this place are, in my opinion, first-class "slackers," their lack of stratigraphical knowledge is lamentable, they cannot even recognise the difference between Black Reef series and Main Reef series, or they would never allow Randfontein series, for instance—as it is called by courtesy—to go out to the world as Main Reef series. You bracket Kleinfontein as Main Reef series in the article referred to, but Kleinfontein is no more Main Reef series than Modderfontein B. is Main Reef series, or are they of the same geological age, which makes a bigger difference still. The more series of payable reefs I can vouch for, after all these years of experience, the better for the Rand. But if the Rand, or "the Reef," as "they" term it, was to go under to-morrow, there are more Rands to take its place—all of which contain Main Reef series, Blue Sky, Van Ryn or Kleinfontein, Du Preez, etc. To say nothing of 30,000 square miles of Black Reef series, which is represented on the west by Randfontein, etc., and east by Modderfontein B., Geduld, etc. This feignedly despised series is the most valuable of the lot, to my mind, patchy though it be (what series isn't?), and will last as a gold producer to the crack of doom. Good luck to Mr. Humphreys' drilling on his 246 claims, as they should contain certain payable reefs, but that Main Reef series is to be found there is quite untenable. The Cason is not Main Reef series, nor is Kleinfontein, therefore the two series can never be linked up and made to fit, any more than the Saxon can to Gray's Mynpacht, in Dr. Mellor's survey out west. New Boksburg Gold Mines can find Main Reef series within its boundaries anywhere if it likes with an angle hole on the dip of Boksburg railway station, but it may be that it funks the values in this overrated series. That De Bell's claims contain the Van Ryn or Kleinfontein series, to the north of the Blue Sky line, goes without saying, as it is its stratigraphical position, but if those interested do not know how to find it it's a pity and a public loss for the time being. If the farm Rietfontein, adjoining, was proclaimed ground, as it should be if Government had time for the middlemen of this country, the imaginary mystery of the trend of Main Reef series would not take long to solve, as quite a few old boreholes have been put down there by geologists to find out "where it is not."—Yours, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg, October 14, 1913.

THE RAND'S ORE RESERVES.

Probability of Last Year's Aggregate Being at Least Maintained—Some New Estimates.

SINCE we published our table of the Rand's ore reserves about five months ago a few important companies have held their annual meetings and have presented to shareholders new estimates of ore blocked out. In addition, the Knight Central Company has re-estimated its ore reserves. It will therefore be of interest to note these new estimates and to see how they compare with those obtaining at the ending of the previous financial years of the mines concerned.

CORNER HOUSE MINES.

Two mines under the control of the Central Mining and Investment have to be considered. The New Modderfontein further increased its reserves, which at June 30 of this year amounted to 4,351,000 tons as against 3,900,000 at June 30th, 1912, and 3,341,830 at June 30th, 1911. There has, too, been a slight improvement in average value. At the Nourse Mines an energetic development programme was maintained throughout the past year; the total footage accomplished was 27,805 feet, an increase of 1,437 feet over the previous year, but in spite of every effort, owing to the extremely broken nature of the reef and the amount of dead work to be accomplished, the payable ore developed amounted to 512,700 tons, a tonnage not sufficient to maintain the ore reserve position. The payable ore reserves at 30th June, 1913, were estimated at 1,795,600 tons, value 6·6 dwts. On comparing the payable ore reserves with those of last year, they show a decrease of 173,400 tons, while the value remains the same; the decrease is mainly attributable to the Main Reef, which accounts for 122,700 tons of the reduction, the diminution in the Main Reef Leader and South Reef tonnages not being of significance. The deficit in the Main Reef reserves may be put down to the fact that certain low grade blocks, which have hitherto been found to be payable, have on the present valuation averaged unpayable, owing to a falling off in the value of the stope faces. It will be observed that the average grade of the payable Main Reef reserves has been improved by ·3 dwts. per ton.

GOLD FIELDS PROPERTIES.

In regard to the mines under the control of the Consolidated Gold Fields of South Africa, the latest re-estimation of ore reserves in the Robinson Deep mine shows that at March 31st last the fully developed payable ore amounted to 1,538,000 mine tons of an average mine grade of 6 dwts., together with some 346,000 mine tons of partially developed ore, indicating an average mine grade of 5·88 dwts. This compares with the previous year's estimate of 1,141,000 payable milling tons of an average assay value of 7 dwts. As to the Simmer and Jack, on a basis of fully developed mining tons there was a reduction from 3,033,000 at June 30th, 1912, to 2,524,000 at June 30th, 1913. It should be explained that the management of the Consolidated Gold Fields of South Africa has recently considered it advisable to record the tonnage and value over a stoping width instead of over a milling width as formerly, in view of the possibility of discrepancies arising partly from unavoidable errors and from variations in the amount of sorting done from time to time. The effect of this alteration is to apparently increase the tonnage but at the same time to bring about an apparent decline in value per ton. By sorting, however, the value is improved, so that in the case of the Robinson Deep the actual value per ton is about the same as at the end of the preceding year.

NEUMANN PROPERTIES.

Turning now to mines under the control of S. Neumann and Co., it is be noted that the ore reserves of the Knight Central Company have been completely re-estimated and at the end of June they stood as under:—

Reef.	Tons.	Value. Dwts.	Width. Ins.
Main Reef	240,800	6·4	62
South Reef	338,200	6·0	60
Main Reef Leader	7,600	8·5	38
Total	586,600	6·1	61

At the end of last year the payable ore reserves amounted to 647,000 tons of an average assay value of 6·1 dwts. over 62 inches, showing an increase of 2,700 tons over the previous year, the value being practically the same. It is thus evident that during the six months ended with June last there was contraction in the ore reserves of the mine to the extent of over 60,000 tons. The value remains at the same figure, but the stoping width is very slightly reduced. At the Main Reef West, too, there has been contraction. At the end of June, 1912, the payable ore reserves of this company amounted to 685,720 tons of an average assay value of 6·3 dwts., whereas at June 30, 1913, they stood at 591,830 tons of an average value of 6·02 dwts. The Consolidated Main Reef, on the other hand, shows a small advance from 610,680 tons at 7·2 dwts. to 614,470 tons at 7·32 dwts.

MAINTENANCE OF RESERVES.

It was estimated that at the end of last year the payable and fully exposed tonnages of the various mines of the Witwatersrand amounted to 87,387,462 tons. Taking the reports of those mines which have published fresh estimates since the conclusion of the year, it would appear that in so far as these companies are concerned there has been some contraction. On the other hand, it is probable that certain other companies have added to their financial years. It must, too, be remembered that one or two developing mines, like the Modder Deep Levels, the Modderfontein Government Areas, and the Springs Mines, which did not figure in our last year's ore reserve list are steadily blocking out ore. Taken on the whole, the sum of the evidence obtainable seems to indicate that despite the trying times through which the Rand has recently passed, the ore reserve position of the mines in the aggregate is being maintained. In other words the industry has not sacrificed any of its stock-in-trade to swell the profit aggregate during the current year.

After months of depreciation, it is pleasant to turn to 387 representative stocks mentioned by *The Bankers' Magazine* that last month showed an appreciation of £18,500,000. Government securities have notably improved, and French Rentes and German 3 per cent. have somewhat recovered their recent heavy fall.

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MAUSS CENTRIFUGAL-FILTERING MACHINE.

A Local Invention with Possibilities.

A NUMBER of efforts have been made to produce a continuous centrifugal-filtering machine, but up to the present time no great success has been achieved. Recently, however, Mr. Wilhelm Mauss, of Johannesburg, has devised and patented a machine (Brit. Pat. No. 27113) which is expected successfully to solve the problem. It is of the type which has formerly been used for filtering beer wort and similar material, but in the present design it is so modified that it will handle pulverised material from metalliferous ores. A sectional view of the apparatus shows that a main central shaft has rigidly attached to it a cradle which holds two drums. There may be more than two of these drums, so long as they are in even numbers, that is, two, four, six, etc., arranged symmetrically with the central axis. The drums are so attached to the cradle that they revolve bodily around the central shaft, and are also arranged so that each one revolves about its own axis, being moved by a smaller shaft passing through the centre of the main shaft, operated by the gearing at the top of the machine. Each drum is served by a feed pipe extending from a common trough mounted upon and rotating with the main shaft. The drums are of such form that while providing at their parts remote from the main axis a chamber wherein the material is retained for separation by centrifugal force and also providing a lip over which the lighter material flows away, they also permit the whole of the contents to fall out by gravity in case of stoppage of the apparatus. The drums are made completely open at the bottom. The least inclination of the walls to the horizontal is greater than the angle of repose of the material upon them, and all upwardly directed angles are avoided. It is desirable that the portions of the walls nearest the central axis of the machine should be substantially vertical, in order that the separated material may fall freely from them. In operation the device is first brought up to normal speed, the pulp introduced through the trough and pipe into the drum chambers. Here the centrifugal force causes the pulp to segregate from the liquid, and to settle on the wall of a drum, while the liquid flows off over the overflow lip into a receiver. The deposited pulp is carried around with the drum as the latter rotates on its own axis, thus causing the pulp to emerge from the liquid. The effect of the centrifugal force in holding the material to the drum surface is thus gradually diminished until it disappears, when that surface is radial to the main axis of the machine, and afterward the effect is reversed, and the material, if it has not already fallen off by gravity, is projected from the surface by an increasingly effective force which reaches its maximum when the wall of the drum is directly vertical. Upon stoppage of the apparatus, the whole of the contents of the drum fall out, leaving the machine ready to start without having first to be cleared of settled pulp, as is frequently necessary in other centrifugal machines.

SHAFTS, THEIR SIZES, COSTS AND CAPACITIES.

Figures for Different Countries of the World—The Mines Department and Rand Shafts.

It is understood that the Government Mines Department will shortly publish a report on the various shafts of the Witwatersrand gold field, in which their dimensions, costs, etc., will be very fully analysed. The document will be one of the most exhaustive of its kind ever attempted and should prove of great interest and value. Obviously, the subject of shafts, their sizes and costs, is of first-rate importance to the mining man. On these fields the sinking of circular pits at the New Modderfontein, Crown Mines, and City Deep, coupled with the assertion of the Government Department of Mines that the Rand does not possess sufficient shafts, have been the most interesting features of recent years. Discussions of the relative advantages and disadvantages of circular and rectangular pits has not of late been revived, despite anticipations that publication of the New Modder sinking costs would stimulate discussion on this point. In view of the interest and importance attaching to the matter, the following table of the costs, dimensions and depths, etc., of shafts sunk in different parts of the world should be of considerable value:—

Shaft.	Depth. feet.	Size.	Area of Excavation.	Cost per foot £	s.	d
*Mysore, India	--	12ft. × 6ft.	—	£20	3	4
*Mysore, India	—	16ft. × 8ft.	—	25	3	4
†Mysore, India ..	—	18ft. diam.	—	25	0	0
*U.S.A.—Average in Lake Superior, Butte, and Cripple Creek regions for large working shafts		–	—	20	16	8
Transvaal		Size of excavation.				
†New Modderfontein	2,158	18ft. diam.		22	1	7
‡Knights Deep	1,244	28ft. × 8ft.	224	36	17	6
‡Knights Deep .	1,217	28ft. × 8ft.	—	48	18	1
*Simmer West .. .	3,408	28ft. × 8ft.	—	21	1	7
*Jupiter	3,752	28ft. × 8ft.	—	20	13	2
*Roodepoort Central		23½ft. × 8ft.	188	15	0	0
*Cinderella Deep	3,900	9ft. 8in. × 33ft. 6in.	—	21	0	0
‡Springs Mines (1)	2,829	42ft. × 9ft.	378	49	0	3
‡Springs Mines (2)	2,569	42ft. × 9ft.	378	51	5	6
‡Tamarack, U.S.A. .. .	4,580	10½ft. × 31ft.	—	20	0	0
†Circular shafts in colliery in England .		12ft. diam.	—	12	0	0
†Estimate .		16ft. diam.	—	15	0	0

*Rectangular. †Circular. ‡Rectangular, very wet.

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Rhodesian Section.

LATEST MINING NEWS.

The Cam and Motor and Giant Mines—The Antelope Mine—Tanganyika Coal—Kambove-Bukama Railway—Susanna Mines—The Falcon Mine—The Lonely—Rezende Mines

It is reported that the Cam and Motor Gold Mining Company, operating on the Eiffel Flats, near Gatooma, is arranging to transfer the property containing the Cam lode to a seperate company, and it is further stated that the Giant Mines of Rhodesia, which is under the same control as the Cam and Motor—the Weil Group—will subscribe for working capital shares. The scheme should certainly commend itself to shareholders as the Cam ore body is quite distinct from the lode in the Motor mine. For the property which it is proposed to transfer the Cam and Motor Company, so it is stated, will receive shares but no cash.

* * * *

The Goldfields Rhodesian Development Co., Ltd. (the managers) have issued a report on operations at the Antelope mine for the quarter ended the 30th June last, in the course of which it is stated:—Total ore reserves on hand to date, 153,278 tons, value 10·2 dwts. The most important points in recent development are as follows:—Seventh level: F.E. 2 rise has now proved payable ore to extend to the level of the sixth main east drive beyond the present working face. The average of this rise is as follows:—110 ft.; average width, 36·9 ins.; value, 9·3 dwts. Sixth level: The development results from the eastern shoot on this level have proved very satisfactory. By cross-cutting south at 464 ft. from the original drive, this shoot was encountered, and to the present 191 ft., averaging 42·7 ins. of an assay value of 10·4 dwts., has been proved. The last result from the east face was 15 ins., value 22 dwts., and from the west face, 68 ins., value 10 dwts. There is still a further 20 ft. of driving east to do to connect with F.E. 2 rise mentioned above, and the fact that the west face is at present overlapping south a portion of the original pay shoot, points to a further extension in this direction. A rise E.E. 3 has been put up on this shoot and for the 45 ft. risen shows an average of 36 ins., value 13·1 dwts. Fifth level: A further addition of 47 ft. has been made to the pay shoot on this level. The total now being 642 ft., averaging 41 ins., value 10·3 dwts. Fourth level: A further 90 ft. of pay shoot has been proved on this level during the period under review. The total now being 561 ft., averaging 51·1 ins., value 11·3 dwts. Reduction plant: The greater portion of this plant is now on the mine. The main engine and generating sett have been erected, also the 1,200 ft. steam driven air compressor. Practically all the frame work for the main buildings has been erected. The machinery for the roasting furnaces is in course of erection, also the filter press plant and tailings elevator. The erection of the various electric motors is also on hand.

* * * *

In a lecture delivered recently at Ghent, Mr. Denyn, "Chef du Cabinet" of Mr. Renkin, stated that the coalfields discovered on the banks of the Tanganyika, near the exit of the Lukuga, are 100,000 hectares in area. Mr. Denyn stated also that there are four beds, and that they are nearly even with the ground. Their discovery was made by the Geomine Company of Liège. In its annual report the Commerciale et Minière (which is largely interested in the Geomines) states that the working of these coal mines will be started after the receipt of a supplementary and confirmatory report to be made by a special mission now on the spot.

* * * *

In the further course of its report the Commerciale et Minière says that its offspring, the Société Coloniale de Construction, brought the Cape to Cairo line to Kambove early in June last, It states that the line will only be open to regular working in this October. As many as 4,800 men are now at work on the completion of the line to Kambove and on its extension to a point 100 kilometres beyond Kambove, towards Bukama. That section will be completed in the early months of next year. If the proposals made by the Coloniale de Construction to the Katanga Railway Company for the further construction of the line are accepted, Bukama could be reached in August, 1915.

* * * *

Susanna Mines cable:—Winze 11 to 12, north shoot, has been sunk 4 ft. to a depth of 111 ft. At 100 ft. reef 50 ins. wide assayed 3 dwts.; at 105 ft. reef 52 ins. wide, assayed 3 dwts. Eleventh level, south shoot. This drive has been driven 5 ft. to a distance of 41 ft. on shoot. At 35 ft. reef 29 ins. wide assays 29 dwts. Winze 11 to 12, s.s. and spur reef, has been sunk 5 ft. to a depth of 29 ft. At 20 ft. reef 38 ins. wide assays 16 dwts. Winze 10 to 11, south shoot, has been sunk 5 ft. to a depth of 82 ft. At 75 ft. reef 16 ins. wide assays 68 dwts.

* * * *

The Gold Fields Rhodesian Development Co., Ltd., (the managers), have issued a report on operations at the Falcon Mine during the quarter ended the 30th June last, from which we take the following:—Total ore reserves to date, 817,011 tons, value 49s. Development during the quarter was much curtailed, the only work done being on the 6th level. The No. 3 east crosscut shows a marked improvement in width over the crosscut immediately above it, while at the same time maintaining its high value. The No. 9 crosscut east on 5th level assayed 7·6 dwts. and 2·9 per cent. cu. over 15 ft., while the 6th level No. 3 crosscut east assays 7 dwts. and 2·01 per cent. cu. over 35 ft., deleting 10 ft. of low values on south side, assays 9 dwts. and 2.49 per cent. cu. over 25 ft. The No. 1 east winze was sunk where horse came in but ore body appeared to be coming in when work was stopped at 69 ft. No. 2 east winze has maintained high values, both in copper and gold, the last values at 80 ft. being 10·9 dwts. and 5.47 per cent. cu. The mining work done consisted of opening up stope drives on 3rd and 5th levels and raising boxholes. The main drive and crosscut on 5th level was widened to facilitate tramming to main shaft. Main shaft: I regret that owing to bad ground sinking was much retarded, causing considerable increased expense. This applies also to the stations and bins both at 5th and 7th levels, steel setts having to be put in. Reduction plant: Excavations for sites for reduction works are nearing completion. Excavations for foundations have been started. Buildings: General offices, etc., are mostly nearly completed. Native labour has been plentiful and health of natives good.

* * * *

The following were the results of operations at the Lonely Reef Mine, Southern Rhodesia, for the month of September, 1913:—Mill ran 25·8 days, crushing 5,920 tons; total recoveries, 4,906·505 ozs. fine gold; value, £20,627 16s. 10d.

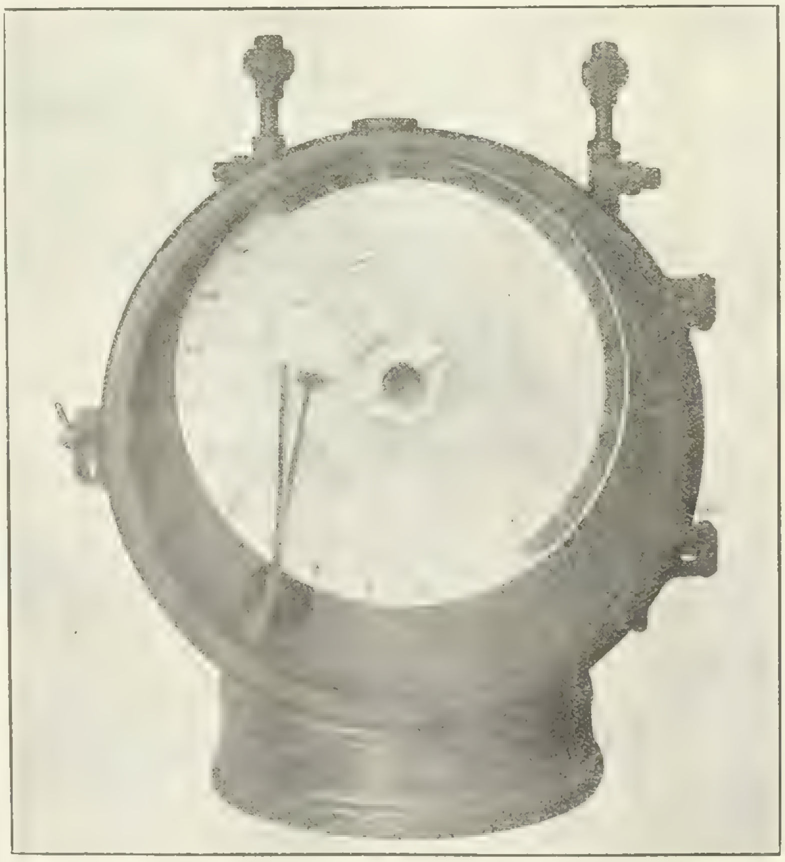
* * * *

The results of operations at the Rezende Mines, Ltd. (Rhodesia) for the month of September, 1913, are as follows: Estimated profit: Central Section, £1,423; Old West Workings, £770; Penhalonga Section, £413; total, £2.606. Note: A cable has been received from the head office in London notifying the declaration of an interim dividend of 7½ per cent. (1s. 6d. per share), payable to shareholders registered on the 20th October, 1913. The share register will be closed from the 21st to 29th October, and dividend warrants posted on the 30th October.

NEW LOCAL PAINT INDUSTRY.

"Excellene"—A New Invention.

THERE are very many paints on the market claiming many advantages, but on actual test, few of the advertising remarks are borne out. "Excellene," the registered trade name is a new invention and a distinct advance in the science of paint manufacturing, and its properties are astounding to all those who have tried it, such as Government Departments, municipalities and a number of mines. It is well known throughout the world among paint manufacturers and users that their products cannot efficiently cover and in some cases adhere to certain surfaces. Messrs. H. Barder & Co., Ltd., of 6 Simmonds Street, Johannesburg, have of late opened an up-to-date factory in New Doornfontein, with a plant capable of turning out 6,000 gallons per week. The manufacturers claim they have secured a process which makers throughout the world have been trying to attain for years past; for instance, Excellene is the only paint which will cover perfectly and dry on the following surfaces, viz.: Soaking wet wood, or iron, or bricks, over oily or greasy surfaces; has a perfect attachment to smoke fumed surfaces without the need of first washing down; withstands acid water and acid fumes, will adhere and cover carbolineum, wet plaster walls, over rust or partly peeled roof paints, over existing oil paint regardless of the sediments contained thereon. At 350 deg. F. it neither blisters nor cracks. As a non-corrosive, Excellene is *par excellence*, having been tested on some of the leading mining properties with a strong solution of chloride of lime, and on other properties with 20 per cent. of $H_2 SO_4$, down as low as 2 per cent. without showing any of the metal, or even the paint disturbed. "Excellene" can be rightly termed a labour-saving preparation, especially for the mines, where chimney stacks can be painted, without first washing down or scraping off the sediments; furthermore, this new paint is very much easier to work with than any paint on the market; it does not drag or make the painter's arm tired, and so retard his progress as other paints do; in consequence he can get through much more work in a shorter time. All Excellene paints have a covering power at least twice that of others on rough or porous surfaces and throughout it dries like a baked enamel. As a waterproof and oil proof it cannot be approached, the following experiments having been tried. A dry brick soaked in water for 14 days was drawn out and weighed carefully, and it was found to absorb half as much water as the weight of the brick when dry. In its wet state it was painted and a few minutes later was placed in the water again for a period of 21 days. The paint had dried in the water (a marvellous achievement) and when drawn out was left in the sun for 14 days, then weighed, with the result that the weight was exactly the same after it had been soaking for 21 days, the covering being air-tight. The alternative was tried; a dry brick, painted with two coats, allowed to dry, weighed and then allowed to soak in water for 14 days. After withdrawing the weight tallied exactly with the weight before it was immersed. A further performance in a practical form of a roof paint as to its adhering properties will no doubt be of interest. A roof was painted lately in Muller Street, Yeoville. The workmen had just completed their work, the paint being still very wet, when a heavy storm broke and rain fell heavily. During the early hours of the morning, and on examination there was not the slightest sign of the paint being washed off; it was a perfect covering. Messrs. H. Barder & Co., Ltd., also guarantee their paints to withstand salt water, and that ships' bottoms can be painted in water, covering perfectly and drying under the water. Messrs. Bellamy & Lambie, of Consolidated Buildings, Johannesburg, have been appointed sole agents throughout South Africa, with the exception of the Witwatersrand mines, and Mr. J. P. Scaife, of Simmonds Street, is the sole agent for the mining area. Samples and demonstrations will be given to all those who care to apply.



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SEPTEMBER OUTPUT IN DETAIL.

Surprisingly Good Results in Face of Difficulties. —Labour Position and the Short Month.

THE following are the salient figures of the September output, repeated from last week:—

Total output	706,186 ozs.
Value	£2,999,686
Decrease	21,910 ozs.
Value	£93,068
Rand output	676,411 ozs.
Value	£2,873,211
Decrease	21,275 ozs.
Value	£90,370
Outside districts	29,775 ozs.
Value	£126,475
Decrease	635 ozs.
Value	£2,698
Total stamps	9,874
Decrease	78
Rand	9,330
Decrease	90
Outside districts	544
Increase	12

THE LABOUR POSITION.

The native labour returns, according to the Native Labour Association's figures, show that the abnormal rate of diminution continues, which means that either fewer boys are coming forward to replace the time-expired returning to their homes, or that fewer boys are renewing their contracts, and instead are taking their discharges. In any case the wastage continues to be greater than usual, as it has been for the past four months. Whether it will begin to turn this month or next month remains to be seen. It usually commences not later than November, and from then on, as the subjoined table shows, flows inward for five or six months. The labour force at present employed on gold mines is lower in numbers than it has been for many years. There is a decrease for September of 6,312, according to the Native Recruiting Corporation's figures, compared with August. August was less than July by 12,392, July was less than June by 18,785, and June was in itself 10,243 short of May and 8,026 short of the April return in the total employed on gold, coal and diamond mines. There is a decrease on gold mines compared with August of 5,586, on coal mines an increase of 125, while diamond mines decreased their complement by 851. The figures for the past three months of the numbers employed by members of the Native Recruiting Corporation at the last day of each month read:—

	July.	August.	September.
Gold mines	170,242	158,223	152,637
Coal mines	9,463	9,236	9,361
Diamond mines	13,378	13,172	12,321
Totals	193,023	180,631	174,319

THE STAMP POSITION.

The fluctuation in the number of stamps employed in the Transvaal shows a total decrease of 78, arrived at as follows:—Rand: Decreases: Brakpan Mines, 20; Knight Central, 5; Main Reef West, 20; New Kleinfontein, 10; Randfontein Central, 25; Robinson Deep, 25. Increases: Van Ryn Estate, 5; Van Ryn Deep, 10. Outside districts: Increase: Miscellaneous, 17. Decrease: Sheba, 5.

THE TWELVE LEADING COMPANIES.

The principal details and results of operations of the twelve leading companies are as follows:—

	Stamps.	Tubes.	Tons.	Value.
Crown Mines	660	24	177,000	£256,962
Randfontein Central	825	29	196,534	254,473
East Rand Proprietary Mines	825	20	135,100	222,764
Robinson	250	6	52,100	104,762
Ferreira Deep	245	6	52,040	102,086
Modderfontein B.	80	5	35,500	74,939
New Modderfontein	180	7	97,900	74,700
Knights Deep	400	11	97,900	74,238
Geldenhuis Deep	300	7	47,000	70,088
Robinson Deep	125	8	48,500	69,586
Nourse Mines	260	7	45,700	69,331
Rose Deep	300	7	54,300	69,306
	4450	137	976,774	£1,443,235

GROUP PROFITS.

The following are the profits returned for July, August and September by the mines controlled by the different groups:—

Rand Mines:

	July.	August.	September.
Eckstein group	£193,835	£220,944	£222,619
Subsidiaries	228,337	244,835	218,699
Gold Fields group	53,955	95,037	88,843
Robinson group	79,546	94,149	89,671
Barnato group	59,316	89,545	99,114
East Rand Proprietary Mines	47,126	82,513	83,460
General Mining group	46,849	66,284	63,199
Neumann group	41,038	60,767	65,242
New Kleinfontein	*	24,238	23,139
Consolidated Mines Selection group	8,005	21,768	20,202
Goerz group	3,564	7,968	11,127
Totals	£761,571	£1,008,048	£985,315

*Kleinfontein group loss ... £9,753

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	14,251	80	—	4,549	19,323
Bantjes Consolidated	19,630	100	3	5,765	24,488
Brakpan Mines	48,300	140	8	15,681	66,609
City Deep	36,000	150	8	16,194	68,788
City and Suburban	24,613	155	2	11,335	48,148
Consolidated Langlaagte Mines	42,500	100	10	13,700	58.194
Consolidated Main Reef	21,080	100	3	8,047	34,181
Crown Mines	177,000	660	24	60,494	256,962
Durban Roodepoort	13,856	90	1	3,501	14,871
Durban Roodepoort Deep	21,100	100	3	7,516	32,053
East Rand Proprietary Mines	153,100	820	25	52,443	222,764
Ferreira Deep	52,040	245	6	24,033	102,086
Geldenhuis Deep	47,000	300	7	16,500	70,088
Ginsberg	15,040	80	1	4,922	20,907
Glencairn Main Reef	18,114	160	—	3,485	14,803
Geduld Proprietary Mines	20,050	60	5	6,929	29,433
Jupiter	27,700	120	6	6,637	28,192
Knights Deep	97,900	400	11	17,477	74,238
Knight Central	20,640	95	3	5,872	24,943
Langlaagte Estate	50,600	200	5	12,240	51,992
Luipaardsvlei Estate	17,000	60	3	4,225	17,947
Main Reef West	16,390	80	3	6,020	25,571
May Consolidated	15,170	100	—	2,786	11,834
Meyer and Charlton	14,500	75	2	8,165	34,683
Modderfontein B.	35,500	80	5	17,642	74,939
New Goch	26,800	120	4	6,080	25,826
New Heriot	12,600	70	1	5,513	23,418
New Kleinfontein	50,000	200	4	15,748	66,893
New Modderfontein	35,100	180	7	17,586	74,700
New Primrose	24,200	160	2	7,897	33,544
New Rietfontein Estate	15,200	120	—	3,669	15,585
New Unified	12,250	60	1	3,638	15,453
Nourse Mines	45,700	260	7	16,322	69,331
Princess Estate	21,500	60	5	6,315	26,824
Robinson	52,100	250	6	24,663	104,762
Robinson Deep	48,500	125	8	16,382	69,586
Randfontein Central	196,534	825	29	59,908	254,473
Roodepoort United Main Reef	23,000	50	3	5,271	22,390
Rose Deep	54,300	300	7	16,316	69,306
Simmer Deep	54,300	180	9	10,779	45,786
Simmer and Jack	63,000	320	7	15,816	67,182
Spes Bona Tribute	5,277	40	—	1,140	4,842
Van Ryn Deep	31,500	70	7	12,027	51,087
Van Ryn Gold Mines	36,560	140	6	12,071	51,274
Village Deep	37,900	180	7	14,078	59,800
Village Main Reef	35,600	220	5	15,225	64,676
Vogelstruis Estate	13,107	80	—	3,356	14,255
West Rand Central	2,198	20	1	952	4,044
West Rand Consolidated	24,600	100	4	8,117	34,479
Witwatersrand	35,320	220	—	10,617	45,698
Witwatersrand Deep	46,300	245	4	16,280	69,153
Wolhuter	29,900	120	4	10,223	43,425
Miscellaneous producers	—	65	—	4,233	17,981

Outside Districts.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
HEIDELBERG—					
Nigel	13,000	75	1	4,665	19,816
Sub Nigel	4,540	25	1	2,037	8,653
BARBERTON—					
Barrett	—		—	329	1,398
Sheba	6,320	60	—	3,235	13,741
Worcester Exploration	5,800	40	2	1,171	4,974
LYDENBURG—					
Ceylon Lydenburg	631	5	—	199	845
Glynn's Lydenburg	3,724	20	1	1,946	8,266
Transvaal Gold Mining Estates	11,765	75	3	8,141	34,581
KLERKSDORP—					
Quest	4,166	35	—	757	3,216
Miscellaneous producers	—	209	—	7,294	30,985

INCREASES AND DECREASES.

The following returns of the September output have been filed with the Chamber of Mines. Increases and decreases compared with August are appended:—

Increases and decreases compared with August are as follows:—

The Witwatersrand.

	Aug. £	Sept. £	Increase. £	Decrease £
Aurora West	19,484	19,323	—	161
Bantjes Consolidated	28,247	24,488	—	3,759
Brakpan Mines	68,851	66,609	—	2,242
City Deep	66,299	68,788	2,489	—
City and Suburban	44,057	48,148	4,091	—
Consolidated Langlaagte Mines	58,003	58,194	191	—
Consolidated Main Reef	31,391	34,181	2,786	—
Crown Mines	279,339	256,962	—	22,377
Durban Roodepoort Deep	34,190	32,053		2,137
Durban Roodepoort	15,067	14,871		196
East Rand Proprietary Mines	231,378	222,764	—	8,614
Ferreira Deep	108,151	102,086		6,065
Geduld Proprietary Mines	22,887	29,433	6,546	—
Geldenhuis Deep	72,645	70,088	—	2,557
Ginsberg	21,035	20,907	—	128
Glencairn Main Reef	15,627	14,803	—	824
Jupiter	34,802	28,192	—	6,610
Knight Central	25.074	24,943	—	131
Knights Deep	69,395	74,238	4,843	—
Langlaagte Estate	49,622	51,992	2,370	—
Luipaardsvlei Estate	18,401	17,947	—	454
Main Reef West	29,590	25,571	—	4,019
May Consolidated	12,599	11,834	—	765
Meyer and Charlton	34.470	34,683	213	—
Modderfontein B.	68,049	74,939	6,890	—
New Goch	26,786	25,826	—	960
New Heriot	23,150	23,418	268	—
New Kleinfontein	74,157	66,893	—	7,264
New Modderfontein	83,060	74,700	—	8,360
New Primrose	34,870	33,544	—	1,326
New Rietfontein Estate	16,171	15,585	—	586
New Unified	15,581	15,453	—	128
Nourse Mines	73,991	69,331	—	4,660
Princess Estate	28,400	26,824	—	1,576
Randfontein Central	270,610	254,473	—	16,137
Robinson	103,955	104,762	807	—
Robinson Deep	78,897	69,586	—	9,311
Rose Deep	78,536	69,306	—	9,230
Roodepoort United Main Reef	22,933	22,390	—	543
Simmer Deep	45,676	45,786	110	—
Simmer and Jack	73,724	67,182	—	6,542
Spes Bona Tribute	5,543	4,842	—	701
Van Ryn Deep	50,344	51,274	930	—
Village Deep	58,202	59,800	1,598	—
Village Main Reef	66,944	64,676	—	2,268
Vogelstruis Estate	14,143	14,255	112	—
West Rand Central	3,878	4,044	166	—
West Rand Consolidated	38,259	34,479	—	3,780
Witwatersrand	44,280	45,098	318	—
Witwatersrand Deep	67,157	69,153	1,996	—
Wolhuter	41,445	43,425	1,980	—
Miscellaneous producers	6,218	17,981	11,763	—
Outside Districts.				
Barrett	803	1,398	595	—
Ceylon Lydenburg	1,202	845	—	357
Glynn's Lydenburg	8.300	8,266	—	34
Nigel	20,202	19,816	—	386
Quest	2,995	3,216	221	—
Sheba	13,975	13,741	—	234
Sub Nigel	7,582	8,653	1,071	—
Transvaal Gold Mining Estates	41,730	34,581	—	7,149
Worcester Exploration	5,594	4,974	—	620
Miscellaneous producers	26,098	30,985	3,887	—

Robinson Group.

Langlaagte Estate.—Tons milled, 50,809; total yield, 12,240 fine ozs.; estimated profit, £11,215; profit per ton milled, 4s. 4·98d.

Randfontein Central.—Tons milled, 196,534; total yield, 59,908 fine ozs.; estimated profit, £78,456; profit per ton milled, 7s. 11·81d.

Total tons milled, 247,343; total yield, 72,148 fine ozs.; total estimated profit, £89,671.

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Base Metals.

Messina (Transvaal) Development.

September operations: Mill ran 24½ days, and treated 2,327 tons of ore, producing 382·72 tons concentrates, average assay 41 per cent. copper, also 340 tons middlings, average assay 8·2 per cent. copper. Smelter produced 58 tons matte, average assay 49·8 per cent. copper. Development footage, 194 feet, including 23 feet sinking No. 5 shaft, making total depth 847 feet. Timbering and stations completed down to 8th level. Electric pumping plant completed and supplying water to camp. Trial run of new concentrating plant gave satisfactory results. All machinery working well. Roasting furnace erected and in operation at smelter.

Zaaiplaats Tin Mining Co

The results for the month of September, 1913, are as follows:—Days run, 26·2; ore milled, 2,951 short tons; residues re-treated, nil; concentrates won, 105 long tons; average value of concentrates, 71·2 per cent. metallic tin; estimated profit for the month, excluding Government tax on profits, £7,871 9s. 6d.; less adjustments in respect of estimated values of previous shipments, £183 2s. 6d.; profit declared for the month, £7,688 7s. 0d.; capital expenditure, nil.

The interesting announcement now appears that Herr Reinecke's system of wireless telephoning, which has been used for some little time past in German mines, has been installed at Dinnington Main Colliery, Yorkshire, through the instrumentality of Mr. Maurice Deacon. Strictly, the system is not "wireless," seeing that it is necessary to have a conducting medium other than air. This, however, in practice, takes the form of pit rails, water pipes, or any other metallic conductor which may be available. With this system it appears to be established that by means of portable instruments it is possible to hold communication in time of disaster between anyone who may be entombed or cut off from the in-bye side and those who are engaged in the work of rescue. The progress of this new development will be watched by the mining industry with especial interest, and in view of the necessity for extensions of the telephone system at many mines, no doubt the example of Dinnington will be followed.

ANSWERS TO CORRESPONDENTS.

T. P. Waites.—The Globe and Phoenix, Rhodesia, several of the mines of the Murchison Range, Northern Transvaal, contain stibnite ($Sb_2 S_3$) in association with gold. Antimony is found, too, in association with gold in Queensland, Japan, Sarawak and Newfoundland. The foregoing does not pretend to be a complete list of the antimonial auriferous ores of the world, but it represents the best information we possess at the present moment.

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REX ZAAIPLAATS CENTRAL TIN, LIMITED.

Chairman Describes Present Position and Prospects.

THE first ordinary general meeting of shareholders of the Rex Zaaiplaats Central Tin, Limited, was held at the head offices, 27 and 28 Bettelheim Buildings, Johannesburg, this week. 69,722 5s. shares out of an issued capital of 83,000 shares were represented. Mr. H. Graumann, who presided, in moving the adoption of the report and accounts, said:—

In asking you to confirm the report and accounts now before you, and which have been in your possession for some days, I do not propose to enlarge thereon, but to deal with developments prior to and since the date to which they are made up. Reference has been made to negotiations in progress with London people for the acquisition and development of your property, and I am pleased to tell you that these have been satisfactorily concluded. Your property consisted of 58 base metal claims, but the negotiations mentioned contemplated and necessitated the acquisition by your company of a further 31 adjoining base metal claims, and the transference of the whole of your enlarged property to the London house. Your board had also in mind the desirability of disposing of the contingent cash liabilities, amounting to upwards of £3,000, and I am happy to say that this object was accomplished. The different transactions referred to have absorbed your available cash capital, and also the 15,000 reserve shares, and your enlarged property is now being transferred without encumbrances of any kind and to acquire which our London friends have floated a company called the Rex Zaaiplaats Tin Mine, Ltd., with a capital of £30,000 in £1 shares, allocated as follows: 10,000 for working capital, 14,990 accrue to us for our property, and the promoters, i.e., our London friends, take 5,010. I think you will agree with me that, at a time when South African ventures are not in good odour in Europe, we have been extremely fortunate in placing our property on such favourable terms, as we are getting practically one-half of the capital of the London company, which, after the necessary deductions have been made, works out on the basis of our shareholders' interest being, as to £1 in shares in the new London company for £2 in shares in our company, and, at the same time, securing the assistance of very strong financial people to develop our property, and being assured of the provision of all future financial support, should the development now in progress warrant it. I think we may assume that the bright prospects indicated by the operations on our property had not a little to do with the decision of our London friends to undertake its exploitation on a larger scale. The results being obtained are, I understand, highly encouraging, and I feel confident that no venture of a like nature has produced more hopeful prospects. I am informed that the work which is being done now is opening up a large body of tinstone, in the form of a stockwork, 20 feet in width, the true footwall of which has not yet been located. The strike over which this has been proved to date to be tin-bearing is approximately 370 feet; in that distance some remarkably rich shoots have been located.

The report and accounts were unanimously adopted, the retiring directors re-elected, and Messrs. F. W. Diamond & English re-appointed auditors for the ensuing year.

SHOT FIRING BY ELECTRICITY REGULATIONS.

Important Alterations in the British Regulations and their Lessons for South Africa

THE Imperial Home Secretary has just made an Order under section 61 of the Coal Mines Act, 1911, entitled "The Explosives in Coal Mines Order of the 1st September, 1913," consolidating with amendments the previous Orders regulating the supply, use and storage of explosives in mines to which the Act applies. In the following are outlined some of the variations in the new Order from the original Order of May 21, 1912, which was subsequently modified by an Order issued on October 15, 1912:—

THE USE OF SQUIBS.

Clause 2 (f) has been altered to read as follows:—No shot shall be fired in any mine except by means of an efficient magneto-electrical apparatus or by means of a fuze complying with the conditions and ignited in the manner specified in the fourth schedule hereto. Provided that in a coal mine or part of a coal mine in which the use of safety lamps is not required, and to which Part II. of this Order does not apply, and in any mine not being a coal mine, shots may be fired by means of squibs of the character specified in the fifth schedule hereto, subject to the following conditions: (a) Squibs shall not be taken into the mine except in a suitable metal case, separate from any other explosive, and shall be kept in the case until about to be used for the firing of a shot. (b) No person shall shorten, bend or untwist the slow match or torch, or light it except at the extreme outer end, or in any other way expedite its burning. (c) No person shall re light a torch which has died out or been extinguished. No person shall take into a mine or have in his possession any squib other than a squib of the character specified in the fifth schedule.

FOLLOWING SHOT-FIRING.

The following is new: (g) The person firing the shot shall, after the shot has been fired, make a careful examination of the place and see that it is safe in all respects.

ELECTRICAL SHOT-FIRING APPARATUS.

Paragraph (g) becomes paragraph (h); what was formerly paragraph (h) now reads: (i) Every electrical firing apparatus shall be provided with a push button, and with a removable handle which shall not be placed in position until the shot is required to be fired, and which shall be removed as soon as a shot has been fired. The removable handle shall at all times remain in the personal custody of the authorised person whilst on duty. For the push button there may be substituted an arrangement by which the firing contact is automatically made at the end of the travel of the handle and on the release of the handle is automatically broken.

MISSFIRES.

Clause 3 (a) reads (the new words being indicated):—(a) The person firing the shot shall not approach or allow anyone to approach the shot-hole until an interval has elapsed of not less than 10 minutes in the case of shots fired by electricity "or by a squib," and not less than an hour in the case of shots fired by other means; and (d): If the shot was fired electrically, he "shall before approaching the shot-hole" disconnect the cable and the removable handle from the firing apparatus and shall examine the cable and connections for any defect.

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Finance, Commerce, and Industries.

The New Factory Act.

The proposed Act to regulate factories and for other purposes, has been issued in draft form to the various sections of the Manufacturers' Association of the Union, and to commercial bodies, and opinions and criticisms have been asked for consideration by the Government. The bill is based largely upon the measures adopted in Australia and New Zealand, and although far from perfect, has been considerably modified as compared with the first draft which received the careful consideration of the Manufacturers' Associations before suggested amendments were forwarded to the authorities. Although styled simply "The Factory Act," its scope includes workshops. Points such as the protection of machinery, shop hours, general public health, settlement of wages disputes and the mining industry are not included, as these are embraced by other measures. The first-named comes within the scope of the Mines and Works Act, and shop hours are dealt with under Provincial laws. The Bill deals with the conditions of work in a factory as defined in the Act and its aim is "to secure healthy and decent conditions of work and reasonable hours of employment." It provides for the registration of all factories and for their inspection; the maximum number of hours of employment; and special provisions are made with regard to employment of women and children, proper protection from fire and reasonable sanitary provisions, which the better class of employer provides. One noteworthy change in the present Act compared with that previously published is in regard to the definition of a factory. The number of employees in a business carried on for gain to constitute a factory under the Act is set down at no fewer than two, whereas in the previous draft the figure was six; and it is provided that "occupier" shall mean the person having the general management and control of the business of the factory.

* * * *

Standard Wrought Iron for Rolling Stock.

A new specification issued by the Engineering Standards Committee contains particulars of some alterations in the specification of August, 1910. Some of the more important modifications are:—(1) A reduction in the number of tensile tests for best Yorkshire bar iron; (2) a similar reduction in the number of bend tests; and (3) the deletion of the quenching test; (4) the inclusion under grade "B" of the tests for plates which were included under grade "C," but with a slightly increased minimum elongation per cent. and somewhat more severe bend tests, and the insertion under grade "C" of plates of Cleveland iron quality; (5) an increase in the minimum contraction of area per cent. of original area for grade "A" round and square bars up to 1½ in. in diameter or section; (6) an increase in the minimum contraction of area per cent. of original area for grade "B" round and square bars up to 1½ in. in diameter or section; (7) the optional use of standard test pieces B or F for angles and flat bars up to 1 in. in thickness; (8) the provision of bend test pieces for blooms and billets, for bars over 2½ in. in diameter or section, and for flats over 1 in. thick; (9) provisions for testing other blooms and billets; (10) the deletion from the tables of tensile tests of the requirements for round or square bars above 4 in. in diameter or section; and (11) the addition of a quenching test for grade "B."

* * * *

Associated Portland Cement.

The report of the Associated Portland Cement Manufacturers (1900), Ltd., for the year ended 30th June last, submitted to the meeting on 29th September, states that the balance brought forward was £37,833, and that the profits, after deductions which include £124,789 for repairs and renewals, amount to £627,259, together £665,092. From this has been deducted directors' and trustees' fees £6,500, Debenture stock, mortgage and other interest £235,116, depreciation and sinking funds £51,292, discount on realisation of securities £35,314, making £328,222, and leaving £336,870. An interim dividend on the Preference shares absorbed £62,110, and there remains a balance of £274,760. Out of this the directors place to the general reserve and depreciation account £65,000, to payment of a final dividend on the Preference shares £62,110, and recommend a dividend on the Ordinary shares for the year at the rate of 5 per cent. per annum, amounting to £96,116, leaving to be carried forward £51,534. The directors are pleased to report a substantial improvement in the company's trading results for the past year, which permits of the payment of a dividend on the Ordinary shares. The revenue from investments also shows a large increase as compared with the previous year. Trade during the period under review has been active, and prices for cement have been satisfactory. Cost of manufacture has, however, shown a marked increase owing to various causes, including the higher price of fuel and increased wages. The new works in British Columbia, referred to in the last report, are now practically completed, and manufacturing operations have commenced. The Tolteca Company of Mexico, in which the company holds practically all the share capital, has yielded a substantial return during the past year, notwithstanding the disturbed state of that country. Works are now being erected in South Africa in which the company has a large interest.

* * * *

The Railway Enquiry.

The Railways Commission of Inquiry is gazetted this week. The following are the terms of reference:—To inquire into and report on (1) the immediate introduction of an eight hours' day. (2) Minimum wage for white adult employees from 8s. upwards per diem. (3) Revision of the present rates of local allowances on the basis of the comparative cost of living at various centres. (4) Abolition of piecework. (5) Better payment of the salaried staff. (6) Less severity of punishment, especially in connection with staff and tablet errors, strikes, etc., and reinstatement of those men who have been dismissed the service for such reasons since Union. (7) All apprentices to be fully indentured, and each apprentice to be placed under the supervision of a journeyman so as to be thoroughly taught his trade. Apprentices after serving their time to be classed as journeymen. (8) Overtime rates: Mechanics, time and a half for all overtime, double time for Sundays and public holidays. Apprentices not to be allowed to work overtime under any circumstances. Systematic overtime to be abolished. (9) Running sheds: All running shed employees working between 6 p.m. and 6 a.m. to be paid at the rate of time and quarter. (10) Decentralisation of shop management. The Commissioners are:—Mr. Justice Ward (chairman), Mr. W. J. O'Brien (of Maritzburg), and Mr. H. J. Poutsma (of Pretoria), with Mr. P. E. Potter, secretary.

* * * *

Oil in South Africa.

The writer of the expert notes on oil in the *Financier* says: Mr. E. H. Cunningham Craig, who has been several months absent from England investigating the oil resources of our South African Colonies for the Union Government, has now returned, and I was pleased to find him looking so well. Mr. Cunningham Craig is not the sort of man to discuss the result of his investigations before his report to the Government is made public, but I gathered from him that his long tour was a most interesting one, and that he made a number of visits to localities previously supposed to be oil-bearing, and also carried out some original work. The Government of South Africa is to be congratulated on having at last obtained from a first-class authority his judgment on the oil possibilities of the territory under its control, and the publication of Mr. Cunningham Craig's report by the Government will be looked forward to with much interest. It will be remembered by readers of this column that among other oilfields within the British Empire with which Mr. Cunningham Craig is familiar are Burmah, Trinidad, Barbados, and Canada.

THE WEEK IN THE SHAREMARKET.

Firm, with Good Undertone—Improving Prospects.

The tone of the market has considerably improved during the week, though the volume of business remains small. London has shown some increase of interest and there have been rather more numerous enquiries received. The prospects are regarded as distinctly more favourable. Next month native labour recruiting may be back at normal; the rains have done great good; and the dividend prospects for Christmas are rosy. The market may therefore be expected to gather strength as it goes and a good end of the year position is looked for. The week has been marked by few special features. Rand dividend-payers are being quietly picked up; but tins and diamonds are almost lifeless. Among the latter Pilandsbergs are steady about par in anticipation of a rise, and the meeting on Monday is expected to prove interesting. The few fluctuations of the week are shown below:—

	Fri., 10th.	Mon., 13th.	Tues., 14th.	Wed., 15th.	Thurs., 16th.
Adair-Ushers	0 3*	0 3*	0 3*	0 3*	—
African Farms	14 0*	14 0*	14 0*	14 4*	14 7*
Apex Mines	17 6*	17 6*	17 0*	17 0*	17 9*
Bantjes Consolidated Mines	14 0*	14 0*	14 0*	14 0*	14 0*
Benoni Consolidated Mines	2 6†	2 0*	2 0*	2 0*	2 3*
Blaauwbosch Diamonds	—	—	—	—	110 0†
Brakpan Mines	52 6*	52 6*	52 0*	52 6*	53 9*
Breyten Collieries	—	—	—	—	25 9*
British South Africa	20 0*	—	19 9†	19 0*	20 0
Bushveld Tins	1 0†	0 7*	—	—	1 0†
City and Suburbans	46 6	46 0*	46 9	47 0	47 0*
City Deeps	54 3*	54 0*	54 6*	54 6	55 3*
Cloverfield Mines	4 0*	4 0*	4 1*	4 2*	4 3*
Clydesdale Collieries	—	8 6*	—	8 6*	—
Consolidated Investment	—	—	—	—	18 0*
Consolidated Langlaagtes	26 0*	25 0*	25 6	26 0†	25 6*
Consolidated Main Reefs	16 3*	16 0	16 3*	16 6*	16 6*
Consolidated Mines Selection	—	—	—	—	8 6*
Coronation Collieries	—	—	—	—	11 0*
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5*
Crown Diamonds	—	9 6	9 6†	9 6†	9 0*
Doornhoek Tins	—	—	—	6 0†	—
East Rand Centrals	8 0	8 0*	8 0*	8 0*	8 0*
East Rand Coals (2s. 6d.)	1 10*	1 10*	1 10*	1 10*	1 10
East Rand Deeps	1 4*	1 4*	1 7†	1 4*	1 4
East Rand Props.	43 0*	—	42 6*	42 6*	43 6*
Eastern Gold Mines (1s.)	—	—	1 2*	1 2*	1 2*
Frank Smith Diamonds	9 1	9 0	8 9*	9 0*	9 0
Geduld Props.	22 0†	22 0†	21 0*	21 6*	21 9*
Glencoe (Natal) Collieries	7 3*	—	7 3*	7 3*	7 3
Glynn's Lydenburgs	15 0*	15 6*	15 6*	17 0†	17 0†
Government Areas	18 9*	18 6	18 9	19 0	19 9
Jumpers	3 0*	—	—	—	—
Jupiters	3 3*	3 3*	3 0*	3 6*	3 6*
Kaalfontein Diamonds	0 4*	0 4	0 5*	0 5*	0 4*
Klerksdorp Props.	2 2*	2 2*	2 2*	2 2*	2 3
Knight Centrals	6 0*	6 0*	6 0*	6 1*	6 3*
Knights Deeps	34 6†	—	—	35 0†	35 0†
Lace Props.	2 6*	2 6*	2 8*	2 8*	2 9*
Luipaardsvlei Estates	7 6*	7 6*	7 6*	7 6*	7 6*
Lydenburg Farms	2 10*	2 11*	2 11	2 11*	2 11
Main Reef Wests	8 0*	8 0*	8 6†	8 0	8 0*
Meyer and Charltons	—	—	—	—	100 0†
Middlevlei Estates	0 11*	0 11*	—	—	1 0
Modderfontein B.	76 0*	76 6*	76 6*	76 6*	77 0*
Modderfontein Deeps	29 9	—	30 0*	31 0	32 0
Natal Navigation Collieries	—	14 0*	14 0*	14 0*	—
New Boksburgs	0 9	—	—	—	—
New Era Cons. (5s.)	6 3*	6 0*	6 3*	6 3*	6 3
New Geduld Deeps	2 0*	2 0*	2 0*	2 1*	2 1*
New Heriots	—	—	—	—	100 0*
New Kleinfonteins	22 6*	22 3*	—	22 6*	22 0*
New Modderfonteins	—	220 0*	—	222 6*	220 0*
New Rietfonteins	4 0*	—	—	—	—
Orange Diamonds	1 6*	1 9*	1 9*	1 9*	1 10*
Pretoria Cements	—	46 0†	46 0†	46 0†	46 0†
Princess Estates	4 6	4 6*	4 6*	4 6*	4 9*
Rand Collieries	—	3 0†	—	—	—
Rand Klips	1 8*	1 8*	1 6*	1 8	1 9*
Rand Nucleus	—	1 9	1 7*	1 8*	1 8*
Randfontein Estates	26 0*	26 0*	—	26 0*	—
Roberts Victors	—	—	—	32 0*	—
Robinson Deeps	—	—	—	27 6*	—
Rooiberg Minerals	27 9	27 6*	27 6*	28 0*	29 0
Durban Roodepoort Deeps	—	18 9	18 6*	18 6*	—
Ryan Nigels	—	—	3 3	—	—
Shebas	—	—	—	—	5 0*
Simmer Deeps		1 6	—	1 0*	1 0*
S.A. Breweries	40 0*	40 0	40 0*	40 0*	40 0*
S.A. Lands	3 3	3 3	3 0*	3 3*	3 3*
Springs Mines	13 9	14 0†	14 0†	—	—
Sub Nigels	8 3	8 3*		8 6*	9 0
Swaziland Tins	42 0			45 0*	
Transvaal & Delagoa Inv.		37 6*	37 6*	—	
Transvaal Coal Trusts	30	30 0*	31 0*	30 6*	31 6*
Transvaal G.M. Estates			46 0*	46 6*	—
Van Ryn Deeps	34 6	34 6*	34 6	34 9	35 3
Village Deeps	33 9*	35 0*	35 0*	35 0*	36 6*
Vogel Cons. Deeps		0 9*	1 0†	0 9*	—
Western Rand Estates			2 9*	2 9*	3 0†
Witbank Collieries	39 0*	—	—	—	—
Witwatersrands	69 6	70 0	69 0*	69 0*	69 0*
Wit. Deeps	57 0*	56 0*	57 0*	58 0	58 6
Wolhuters	15 0	14 6*	14 0*	14 3*	
Zaaiplaats Tins	34 3	35 9	35 9*	37 0	37 0*

*Buyers. †Sellers.

MINING MEN AND MATTERS.

Several directors of De Beers paid a visit to Pretoria and the Rand last week-end.

* * * *

Professor Yates is at Kimberley this week-end making special arrangements at the Kimberley School of Mines, necessitated by the expansion of the engineering and mining courses at that centre and Johannesburg.

* * * *

At the request of the Chemical, Metallurgical and Mining Society of South Africa, the South African Red Cross Society is arranging for the annual competitions for the Ambulance Challenge Shields presented by the former Society and the Transvaal Coal Owners' Association. It is also arranging the details for the Interdepartmental Competition for the trophy presented by the B.S.A. Explosives Co. for the employees of the Modderfontein Dynamite Factory. The dates for the competitions have been provisionally arranged as follows:—Colliery Shield, 7th December; Mine Surface Shield, 14th December; Mine Underground Shield, 21st December; Dynamite Factory Trophy, 29th December. Full particulars will be published next week. The Hon. Secretary for the Competition is Mr. Fred Rowland, P.O. Box 1183, Johannesburg.

The directors of the Bell Reef Development Company, in their report for the year ended March 31 last, state that at the close of the year the liquid resources were insufficient to meet the expenditure until crushing begins, and it has been arranged to borrow from the Gold Fields Rhodesian Development Company the sum of £30,000 for that purpose. The new main shaft has been pushed on, and at the end of May last had reached a depth of 876 ft. The reef was intersected at the seventh level by the new shaft assaying 47 dwts. over a width of 34 ins. Development on this level is proceeding satisfactorily. The ore reserves at the end of the year amounted to 42,495 tons, averaging 12 dwts., all high values having been reduced to 40 dwts.

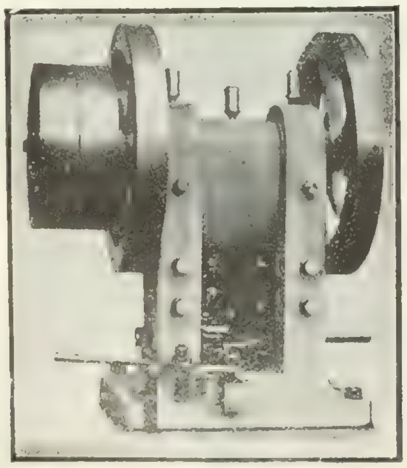
On the Northern Claims and Development Syndicate's Hilda Reefs property work is going forward steadily, and satisfactory progress is being made. The two new shafts are now down 40 feet each and the third shaft to the west has been started. The quartz reef outcrops for a distance of 1,500 feet on the line of strike and varies from one to six feet in width. Values are said to range from 6 to 30 dwts. of fine gold to the ton.

Engineering Notes and News.

Electrical Distribution for Mines.

By J. W. Anson.

The type of cable in general use on the mines as main feeder cable—namely, three-core, paper-insulated, lead-covered, served, double steel-tape or steel-wire armoured, and served over all—is undoubtedly admirable for its work, due to the fact that it may be laid directly in the ground without any more protection than that given by the armouring of the cable. The soft veld of this country is very suitable for cheap trenching, and a large cable network on a mine can be rapidly and cheaply installed. Trenching 1 ft. 6 in. deep by 1 ft. wide should only cost 0.6d. per foot, with properly organised native labour. Although there can hardly be much difference of opinion as to the class of cable to use, the designing of a cable network to supply electric power to a large number of motors in various positions and at various distances apart, together with the methods to be adopted in jointing and terminating the cables, may give rise to considerable discussions. The essential points of a well-designed cable network for a mine are as follows:—(*a*) Reliability of supply to all important motors under any conditions. By "important motors" are meant those motors the stoppage of which would mean a cessation of milling and winding operations. (*b*) Facility to take any one or two main cables off load for the purpose of working on their respective switches or panels in the transformer house. (*c*) That the cost of electric power used for the various processes may be easily obtained at the end of each month by reading the integrating wattmeters on the feeder panels. This necessitates each panel supplying all those motors which are used continuously for any one purpose in the cycle of operations of the gold-reduction process. On a modern mine the following are the most important motors which have to be supplied with current:—Winder motors, mine pumps, mill-motor or motors, first lift tailings pumps, second lift tailings pumps, tube mills, return water pumps, pumps in slimes pump house, pumps in extractor house, dump haulage motor or motors, mill haulage, Butters' filter plant motors and belt motors, etc., for Sands plant. Each winder motor should have its own feeder and panel in the switch house, owing to the very heavy current taken by these motors during the acceleration period. If there are two or more winders in one engine room, the separate sets of bus-bars in the engine room, from which the individual winder motors are supplied, should be capable of being connected together if necessary. On a small property with two shafts, one winding engine at each shaft, the bus-bars in the two engine rooms should be capable of being connected together by an interconnecting cable, in addition to the main feeder from each engine room to the switch house. Although it is customary to keep winding-engine cable networks separate reduction plant networks, this has usually been done because the reduction works are frequently a long way from the shafts. There is no reason whatever, why a link cage in a winding-engine room should not be interconnected with the reduction works link cages, provided that it is not too far away. It is difficult to obtain any system of interconnecting cables in a mine, the main cable usually looping in from pump station to pump station. In some cases, however, where a new pumping station has been installed at a lower level than any other station and, owing to the existing pump feeder being heavily loaded, it has been necessary to run a new cable from the switch house to the deep-level pumping station, advantage has been taken to connect the new station with the nearest old station higher up the shaft. This changes a bad system into a very good one: the old pump motors can run on the original cable and the new motors on the new cable, and should anything happen to either feeder the interconecting cable can be brought into use at once. Modern mining practice is tending towards the centralisation of all the pumping for the mine in one deep-level station, using high-lift centrifugal pumps with a big duty, and consequently large motors, up to 600 h.p. If two such pumps were installed with a possibility of both running on load, two cables must be run, one for each pump, and the separate bus-bars in the pumping station on to which each cable is connected, and from which each motor cable is led away, should be isolated by links only. Furthermore, each cable should be large enough to drive both pump motors on full load in case of great emergency, as it might be necessary to run both pumps with one cable out of commission, in which case the bus-bar isolating links mentioned above would be closed. For instance, if two pump motors are installed, each taking 120 amperes per phase at 2,000 volts across phases on full load, two 0.2 sq. in. three-core cables should be installed. All cable should be ordered to be manufactured in strict accordance with the B.E.S.C. specification for cables, dated March, 910; and 2,000-volt cable should be laid for both 2,000-volt and 500-volt circuits. In certain cases, for extremely important work, it might be considered advisable to use cable manufactured for a working pressure of 3,300 volts, even if it is to be installed on 2,200-volt circuits. All cable joint and trifurcating boxes should be fitted with tinned gunmetal sweating glands for making a plumbed joint on to the lead covering of the cables. The cables should always enter fairly into the gland, *i.e.*, the centre line of the cable, or cables, should coincide with the centre line of the cable boz for a distance of about 3 ft. 6in. on one side of the box in the case of a terminal box, and on both sides of the box in the case of a joint. Many cases have been noticed in which the cable leaves the box at a sharp angle, and when a box is being made in this manner the strain of the cable must cause the joints in the box to lie over on one side of the other, near the cast iron. The isolating-link cages are used as distribution centres in the various buildings forming a reduction plant, to receive the main and interconnecting feeders and to supply current to the various motors in the building. The link cages should be entirely fireproof, and may be erected either inside or outside the building, according to circumstances. Link cages erected inside should be constructed of solid sheet iron, preferably No. 18 S.W.G.; link cages erected outside may be constructed of brick, with a semi-circular roof. The length is entirely governed by the number of sets of links installed, but the height of sheet-iron link cages, which may stand on a wooden floor, should be about 6 ft., as this height is most suitable for the size of sheet iron usually available. Link cages should contain bus-bars, isolating links, cable boxes on incoming feeders and outgoing motor cables; and spark-gaps connected to the bus-bars to protect all motors and electrical apparatus connected to those bus-bars in case of a rise in pressure on the network. Fireproof barriers, about ½ in. thick, should be fixed between each set of three links, so as to clearly indicate the three links belonging to any one cable box. If this precaution be not observed, it is extremely easy for an operator to draw one link of one set of links and two links of another set, with serious results. The inside of all link cages should be painted white, as this facilitates operations at night, when the available light may be small. All lugs connecting the tails from the cable boxes on to the bottom terminals of the isolating links should be fitted with at least two grub or pinching screws, so as to prevent the tails falling out of the lugs and causing an arc if the soldering is faulty. These grub screws should be screwed tightly into the strands of the cable whilst the lug is being soldered. A suitable size of copper bus-bar for link cages is 1½ in. by ¼ in.; this section will carry 750 amperes at 2,000 amperes per square inch, and forms a very stiff bus-bar, eminently suitable for the connection of the numerous straps leading to the isolating links.



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QUARTERLY REPORTS.

Brakpan Mines.

The linear development for the quarter ended September 30 at the Brakpan Mines amounted to 4,957 feet, of which 4,618 feet were on reef averaging 6·72 dwts. over a reef width of 35·41 inches. Of the footage on reef 1,675·5 feet were in payable areas and averaged 11·41 dwts. over 38·20 inches. The following were the results obtained from reduction operations during the quarter: Ore hoisted from mine, 151,066 tons; ore from surface dump, 5,520 tons; ore sent to crushing and sorting station, 155,936 tons; percentage of waste sorted out, 11·223; average number of stamps running, 153; net running time, 66·833 days; ore milled, 137,936 tons; milling duty per stamp per 24 hours, 13·529 tons; yield in fine gold, 26,624 ozs.; yield per ton milled in fine gold, 3·860 dwts. Cyaniding: Tons treated, 137,325; yield in fine gold, 18,199 ozs.; yield per ton treated in fine gold, 2·651 dwts. Total yield in fine gold, 44,823 ozs. (6·499 dwts. per ton milled). The revenue for the quarter amounted to £188,715 (27s. 4·353d. per ton), and the working expenses to £138,739 (20s. 1·398d. per ton), leaving a working profit of £49,975 (7s. 2·955d. per ton). The capital expenditure incurred during the quarter amounted to £3,043 1s. 6d., and the excess expenditure on development to £1,079 17s. The disorganisation arising out of the strike has been largely overcome, but there is still such a shortage of native labour as to curtail the tonnage crushed. Although October may show a further shortage, it is expected that thereafter the position will gradually improve. Development continues to show abnormally low as to the percentage payable, and this factor still exerts an unfavourable influence on the grade of ore going to the mill. The assay value of development, however, was materially better than for the previous quarter, and there is a tendency to further improvement. The standing charge for development has for the time being been increased to 2s. 6d. per ton milled in view of the smaller percentage payable and the curtailed rate of milling.

Springs Mines.

The following development results were obtained at the Springs Mines during the quarter ended September 30:—

	Footage sampled.	Reef width. inches.	Assay value. dwts.
North shaft—			
North haulage	300	34·43	4·70
East haulage	60	35·58	5·05
West haulage	160	25·34	19·59
Main incline	280	27·45	7·93
Station roadways	20	27·00	8·56
South shaft—			
Station and station roadways...	60	52·67	6·69
For quarter	880	31·71	8·08
Previously reported	445	35·27	12·00
Totals and averages	1,325	32·91	9·49

The south shaft has been sunk an additional 281 feet and timbered 278 feet, making the total depth at the end of the quarter 3,805 feet, of which 3,772 feet are timbered. The reef was intersected during August at a depth of 3,692 feet, and on assay showed an average value of 5·81 dwts. over 53·69 inches. The station has been cut and 150½ feet of work accomplished on station roadways. Of this footage 60 feet were sampled, with results as shown in the tabulation. The Rand Water Board took 103,560,000 gallons of water during the quarter.

Modder Deep Levels.

The following are particulars of work done on the property of the Modderfontein Deep Levels during the quarter ended 30th September last: 3,591 ft. were driven, risen or sunk, inclusive of 246 ft. sunk in the incline shaft; 2,970 feet were sampled, showing an assay value of 9·7 dwts. per ton over 42·2 inches. Since the commencement of development work a total of 12,120 feet has been driven, risen or sunk. In respect of 1,723 feet the reef has not been exposed and 385 feet had not been sampled at the end of the quarter. The balance of 10,102 feet assays 8·4 dwts. per ton over 46·3 inches.

Glynn's Lydenburg.

The following is the report on the operations at Glynn's Lydenburg for the quarter ended 31st July:—Ore received from mine, 10,616 tons; tonnage crushed, 10,572; number of stamps operating, 20; number of tube mills operating, 1; mill yield per ton, 14s. 11·9d.; assay value of pulp, 31s. 0·7d.; total yield, 5,435·285 fine ozs.; total yield per ton, 10·282 dwts.; working costs, £11,291, equal to 21s. 4·3d. per ton milled; working profit for the quarter, £11,477, equal to 21s. 8·5d. per ton milled; working revenue, £22,768, equal to 43s. 0·8d. per ton milled. Capital expenditure amounted to £81. Development account has been reduced by £1,404. Development work, 1,145 feet. The reef disclosures were as follows: Distance exposed, 110 feet; width, 9 inches; assay value, 35s. 6·384d. The manager reports as follows:—In addition to the reef exposed as given above, 1,495 feet have been driven in the werf mijnpacht during the quarter, exposing 650 feet of reef 9 inches wide, assaying 9·9 dwts. In May last it was decided to sink two shafts along the eastern boundary of the werf mijnpacht, some distance to the south of our present workings, in order to hasten the development work. Water was encountered in one shaft, which has been stopped. The other is down a distance of 100 feet and is still being continued. A hole is being sunk by means of a diamond drill in order to test the ground recently pegged under prospecting claims licenses. The drill is now down about 120 feet and is being continued. Prospecting work has been started on the vergunning claims at the southern end, close to the intake of the water race. Native labour has been more plentiful during the last few weeks. The railway has reached Sabie, and is expected to be open for traffic very shortly. In view of enquiries from shareholders regarding the prospects of the company, a report was obtained from Mr. S. Aimetti, general manager of the Transvaal Gold Mining Estates, Ltd., a copy of which has been sent to each shareholder. Dividend No. 24 of 10 per cent. was declared on the 25th July, payable to all shareholders registered in the company's books at 31st July.

Rooiberg Minerals.

The report on operations on the Rooiberg property for the quarter ended the 30th of September states that the estimated profit for the three months' operations totals £16,777; the net adjustments of estimated values of previous shipments made on receipt of account sales were £128, and the profit declared was £16,648. No allowance has been made in the above statement for Government profits tax. The average price per ton of metallic tin on which the quarter's revenue has been determined is £188 17s. 4d. Tons treated were: From mine, 7,371; sands and slimes retreated, 3,088; total, 10,459 short tons; concentrates produced, 322 long tons. The accumulated tonnage not retreated at the end of the quarter of middlings and slimes was 27,222 short tons, the average assay value being 2·5 per cent. metallic tin. During the quarter an amount of £3,662 was expended on capital works, of which £3,025 was incurred in the erection of additional slimes plant. This additional plant is now in commission and is giving good results. On exploration and prospecting work at the intermediate workings, shaft No. 32, important pockets of high grade ore have been disclosed. At the Camp workings a flat pocket has been discovered from which high grade ore is now being grassed. There has been a substantial addition to the ore at grass during the quarter. In order that the plant may be tested with mine ore only, it was decided to work for one month exclusively with mine ore. This test is being carried out during the month of October, and the results will therefore be abnormal, in that no accumulated sands and slimes will be retreated.

Preventing Timber Decay.

At mines where the air is heated and saturated at the intake, and in instances where the intake air is saturated by water spray, the life of the entry timbers is shortened to eight or nine months, and even less in some cases. Timber sets, two legs and a collar, are expensive when the cost of timber, the work, and framing is considered. Therefore, the necessity of treating the timber with some efficient preservative, like creosote, to resist decay is apparent if economy is an item. Warm, dry air induces "dry rot," and warm, moist air induces "wet rot."—*Colliery Engineer.*

The "jackhamer" drill is becoming increasingly popular for shaft sinking in Butte, where the rock is favourable (*A.I.M.E. Bulletin*, August, 1913). It is found that in either too soft or too hard ground, however, certain difficulties are encountered. In soft grounds the holes are likely to plug. Difficulty from this source is made less serious at the Pittsmont mine by placing a hole sidewise in the steel about 1 inch from the end of the bit, so that if the end hole becomes plugged the air, passing out through the side hole, keeps the drill hole clean above the last inch of the drill. In soft rock the drill bits are enlarged so as to take 1¼in. sticks of powder; but in hard rock if the bits are so enlarged, drilling is too slow, and when not enlarged the smaller powder will not break the bottom clean. It is suggested that a more powerful drill of the "jackhamer" type might prove satisfactory in hard rock.

WANTED.

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FOR TRANSVAAL COLLIERY.

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c/o S. A. Mining Journal,
Box 963, Johannesburg.

Automobile Notes.

English and American Cars on Rough Roads.

A New Zealand correspondent who has to encounter many water crossings in his car writes to *The Motor* on the point:—" I have read with interest discussions re cars for Colonial conditions, American vs. English cars, high and low built cars, etc., but I have not seen sufficient attention drawn to the necessity of a car being built so that it can be driven through water, and reference made to damage that may be occasioned through the carburetter being placed low down, so that when the car enters deep water with much way on, water is drawn through the air intake, and, refusing to be compressed, something has to go—usually the cylinder heads or connecting rods. In one case I know of the heads of three cylinders were knocked out; in one case water jackets and all went. In four other cases connecting rods were broken or bent; in one other case the cylinders were blown off, one pair taking part of the crank-case; in other cases lugs were broken. As a result, people ask for a good ' water ' car. Some cars have pressure-fed carburettors placed high and magnetos placed low, or *vice versa*, but seldom unless specially altered. Some motorists seem to think that no damage is occasioned by attempting to ford a deep stream, and that if they get ' stuck ' the inconvenience of getting wet is the only penalty, until some such accident as above enumerated occurs. In this district, South Canterbury, N.Z., the local floods that occur periodically bring in a harvest to the garage owners. Some cars also have openings to the sump, and crank-case placed low, so that when one gets into deep water one has a crank-case full of water to dispose of under very trying conditions, also short-circuited magnetos, etc., this often occurring far away from help in sparsely-populated districts. The high-powered light American cars are popular in certain districts, as they will ' plug along ' over rough earth and grass roads in a way one cannot expect a smaller powered car to do, and withal are lightly sprung. One does not hesitate to take them rough trips when one would not like to take a smarter and more expensive car. I was following behind a car of this type some little time ago over very rough country. It had five heavy people up, and was doing about 25 m.p.h. regardless of bumps. It fascinated me to watch the back axle and wheels moving up and down, the springs absorbing nearly all the shocks, except when the car struck a water ' race ' or some other bad bump.

Lubrication and Careful Driving.

A driver gives in *Motor Traction* the following account of his methods:—" The two greatest points in order to obtain satisfactory service from a motor vehicle are the thorough and careful lubrication of all moving parts and careful driving. I go round every morning with an oil can and oil all the moving and wearing parts, such as the brake connections, etc., and give a turn to all the grease cups, also a glance at the same time to all nuts and bolts, and if any are loose tighten them up at once. I then lubricate all the valve tappets and guides, magneto drive, and any moving parts under the bonnet. I also give a look to see that the water pump and the oil fan, etc., are working properly, and fill the oil sump to the proper level. If the machine is of the chain-driven type and not encased, grease the chains well and adjust them if necessary. About every fortnight I clean out the sump of the engine, filtering the dirty oil and adding some fresh. I also remove the crank-case covers and examine the big ends, also remove the differential and gear box covers, and add grease or oil as required. Steering connections should also be watched, and the exhaust valves ground in about every 1,000 miles, and the inlet about every 2,000 miles. The sparking plugs and magneto connections should be cleaned and adjusted. When on the road do not overload or over-drive the machine, and avoid as far as possible driving on tramlines, as these do a considerable amount of damage to the tyres. Drive as much as possible on the throttle, and always go slowly round corners, as this minimises the stress put upon the tyres."

The Fuel Question: An Important Industry.

Widespread interest has been aroused by the announcement that 40,000,000 gallons annually of a British motor fuel may be produced by a process discovered by the Petrol Substitutes Joint Committee. If the scheme materialises, it will go far towards solving the serious situation created in the motor industry by the high price of petrol, which now costs the consumer 1s. 9d. a gallon for the " best " quality, and 1s. 7d. for the second quality. The probability of the new fuel being sold at 25 per cent. less cost per gallon than the present price of petrol, which was announced by the

CONSIDERABLE REDUCTIONS
IN
PRICES
OF
CONTINENTAL TYRES.

New Price Lists on Application.

secretary of the Petrol Substitutes Joint Committee, Mr. Stenson Cooke, makes the discovery quite the most important one yet made in connection with the fuel problem. "We are erecting an extensive plant on the outskirts of London," said Mr. Stenson Cooke to a press representative, "and the extreme simplicity of the method of production of the new fuel places it easily first among the various solutions so far brought forward for the solving of what is now a national problem. One of the most important points about this home supply will be that the stability of the fuel supply will be guaranteed." The precise nature of the new fuel is a matter of speculation among motor engineers, and considerable importance is attached to the fact that at least one plant for the production of motor fuel from heavy oils is in course of construction near Woolwich.

Technical Education Organiser.

As promised by Mr. Malan last week the Department of Education is inviting applications for the post of Technical Adviser and Secretary to the National Advisory Board for Technical Education. The post commences at £700 a year, with local and travelling allowances, and rises by annual increments of £25 to £800. The appointment is to be for a period of three years, renewable at Government option. The duties of the post include (a) to be an officer of the Union Department of Education, and to act as secretary and adviser to the National Advisory Board for Technical Education; (b) to visit, inspect, and report on all work coming within the scope of technical education as defined by regulation, and performed either under the control, and with the aid of the Provincial Education Departments or other Government and Government-aided institutions; (c) to collect such information as will enable the Board and the various educational authorities concerned to establish a standard of uniformity and co-ordination throughout the Union in the systems of education, examination, certificates, and training of pupils and teachers in technical subjects; (d) generally to discharge such other duties as may be assigned to him by the Board or the head of the Department.

Great Britain G.M. Co.

The annual meeting of the Great Britain Gold Mining Company was held this week. The Chairman, in moving the adoption of the report of the directors, balance sheet and profit and loss statement for the period from the 1st of July, 1902, to the 30th of September, 1913, said: I need only briefly refer to the information set forth in these. Your property remains the same as at the end of the previous financial year, namely, freehold of the farm Vogelstruisfontein No. 55, and mynpachts and claims, representing an area of 324 claims, also certain rights in a water-right on the adjoining farm Klipspruit. The revenue for the period covered by the accounts, from owners' share of claim licences, interest, dividends and rents, amounted to £2,313 19s. 7d., expenditure to £1,586 7s., leaving a balance of £727 12s. 7d. The cash on fixed deposit and current account at the 30th of September, 1913, amounted to £6,394 3s., and shareholdings at market prices £4,240, making a total of £10,634 3s. available in liquid assets. Since the last annual meeting no opportunities have offered of dealing with your company's mynpachts or claim holdings. The share investments of your company remain as at the date of your last annual meeting, viz., 200 Transvaal Gold Mining Estates, 1,500 New Kleinfonteins, 200 Main Reef Wests, and 1,100 Village Deeps, against which the sum of £883 2s. 7d. has been set aside for depreciation during the period under review, bringing these down to their market value on the 30th of September, 1913. Dividends amounting to £420 were received on these shares.

The report was adopted. The retiring directors, Messrs. H. L. Lyons and A. A. Auret, were re-elected; and the auditors, Messrs. F. W. Diamond & English and G. M. Pemberton, were reappointed.

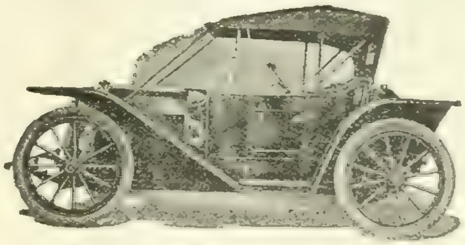
South-East Africa, Limited.

Manager's cable to London states: "Mahdyke mine deep level adit: For the last 25 feet reef average 16 ins. wide; average assay value per ton of 2,000 lb. is 7 dwts."

INVESTORS' DIARY.

The following company meetings have been announced:—

Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.
Nov. 25.—Transvaal and Delagoa Bay Investment Co.



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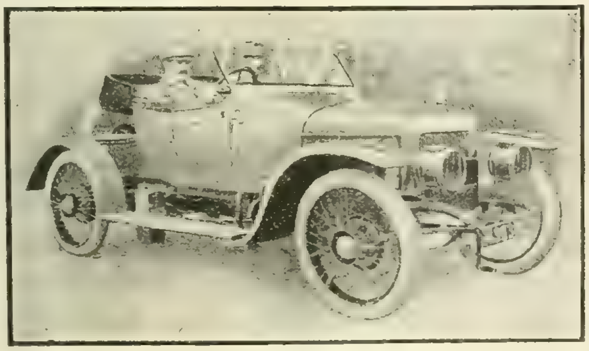

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Miners' Phthisis in Cornwall and the Transvaal.

IMPORTANT STATISTICS PREPARED BY DR. HALDANE.

An analysis of the mortality returns due to phthisis of miners who had at any time worked machine drills from the Redruth registration districts has been prepared by Dr. J. S. Haldane, F.R.S., and shows as follows:—

Place where rock-drill work was done.	Average 1900-2.	1907.	1908.	1909.	1910.	1911.	1912.
Cornwall only	11·3	16	7	12	8	9	8
Cornwall and Transvaal ...	12·0	5	7	7	3	2	4
Cornwall and elsewhere abroad	1·7	—	1	—	2	—	2
Transvaal only.	16·0	26	14	7	10	15	15
Transvaal and elsewhere abroad	1·7	—	1	2	2	1	1
Elsewhere abroad	2·0	1	1	2	2	2	1
Totals	44·7	48	31	30	27	29	31

Average duration of employment.

Place where rock-drill work was done.	1900-2.	1907.	1908	1909.	1910.	1911.	1912.
Cornwall only	8·4	7·6	8·1	7·1	7·0	5·8	11·0
Cornwall & Transvaal	11·6	—	9·0	5·6	6·0	—	4·0
Transvaal only	4·7	4·3	4·0	4·0	4·1	4·9	5·2

Average age at death.

	1900-2.	1907.	1908.	1909.	1910.	1911.	1912.
Cornwall only	37·5	41·0	36·6	41·0	49·0	37·0	39·4
Cornwall & Transvaal	36·4	—	37·6	38·1	40·0	—	44·0
Transvaal only	36·3	37·3	39·1	42·0	40·2	39·9	36·8

TOTAL DEATHS AMONG MINERS.

Average.	Lung Disease.	All other causes.	Total.
1900-1902	77	28	105
1907	82	36	118
1908	73	38	111
1909	71	29	100
1910	55	23	78
1911	65	34	99
1912	69	25	94

New Patents.

463. James Wilshir and William Martin.—Improvements in hose connectors.
464. William Calder.—Improvements in grinding apparatus of the tube mill type.
465. Robert Anderson.—Improved tube mill end liner.
466. William Simpson.—A new and improved central coupling buffer.

Contracts Open

The following are announced in the *Government Gazette*:—

For supply of fencing material and gates for grain and coal bags to South African Railways and Harbours (Nov. 11).

For South African Railway and Harbours, paraffin oil (Oct. 28); also for antifriction grease and carbide of calcium (Nov. 11).

For erection of school, Lilian Road, Fordsburg; ditto, isolation block, Girls' High School, Pretoria; drainage, Bloed Street School, Pretoria (Oct. 17).

Erection of telephone exchange, Boksburg (Oct. 29).

Erection of teachers' quarters, Schoongezicht No. 302, Lydenburg South; drainage, West End School, Pretoria (Oct. 24).

For stores, in "Gazette," 23rd September (Nov. 11); Portland cement (Nov. 18); lubricating oils and galvanised steel sheets, and cotton waste (Nov. 25).

Tenders Accepted.

Accepted tenders will be found in the "Gazettes" for various services and supplies:—

Union Government, 5th September, for supply of steel shelving, conveyance of mails, erection of students' quarters, for supply of mealie meal, Department Posts and Telegraphs, Natal Mill and Elevator Company, Durban, at 12s. 10d. per muid, f.o.r. Pietermaritzburg.

Union Government, 12th September. J. Sanderson, Woodstock, Department of Posts and Telegraphs, for repairs to canvas mail bags, supply of tubular poles, Scottish Tube Company, Ltd., Johannesburg, J. J. Steedman & Co., H. Hume, Durban.

Union Government, 16th September. Supplies, conveyance of mails, H. Hill, jun., Coquidale; supplies, South African General Electric Company, British General Electric Company, Johannesburg; supplies, Defence Force, J. Adendorff & Co., Bloemfontein; Patlansky Bros. & Schauder, Port Elizabeth; J. B. Fulton, Wolvehoek; Millner & Co., Capetown; D. Myer & Co., Pretoria; P. J. P. Narais & Son, Tulbagh; Cooper & Co., H. Morrisse & Co., Johannesburg; J. Goldblatt, Woodstock, and Malcomess & Co., Ltd., East London and other lists, for services Public Works Department.

List of accepted tenders. In "Gazette," 19th September. Henley's Telegraph Works Company, Western Electric Company, British General Electric Company, Johannesburg; H. Hume, Durban; J. Sanderson, Woodstock; D. Isaacs & Co., Capetown; T. W. Beckett & Co., Pretoria; and R. Saddington & Son, Johannesburg, for supplies to Department of Posts and Telegraphs.

List of accepted tenders for numerous services. In "Gazette," 23rd September and 26th September.

Westralian v. Rhodesian Methods.

Recently Mr. H. T. Brett, who was at one time well known on the Rand, and is now a leading consulting metallurgist in Rhodesia, revisited Kalgoorlie after an absence of several years, and ventured some criticism of Australian metallurgical progress. Mr. Brett's views have induced W. A. MacLeod, a Westralian metallurgist, to make some interesting remarks in the *Kalgoorlie Mines*, in the course of which he states:—

I was pleased to note in Mr. Brett's remarks that he referred to one mine in Rhodesia which was to be equipped with a large plant on West Australia lines, dry crushing, roasting and cyaniding. I also noticed two references to installations of flotation processes, one referring particularly to the minerals separation. Although Mr. Brett's casual review of the position seems to have impressed him with the want of progress in gold mining generally, still it is gratifying to know that he evidently recognises the advances made in Australia in flotation processes, of which Broken Hill is the home. Mr. Brett mentions the case of the Shamva mine, a large low-grade property, worth $4·80 per ton. The plant on this property, when complete, will treat 50,000 tons per month, or nearly 2,000 tons per day, and the cost of mining and treatment he estimates at $2 per ton. This at first sight appears, and no doubt is, excellent work, but it must be remembered that a similar property in Western Australia could be operated on practically the same figure, for we are already operating on tonnages of from 150 to 300 per day at a cost of $2·40 to $3·36 per ton.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

East Rand Central Reconstruction.

Details of the long-expected reconstruction scheme of the East Rand Central are now available. The capital of the company is to be reduced from £175,000, divided into 175,000 shares of £1 each, to £87,500, divided into 175,000 shares of 10s. each, and such reduction will be effected by cancelling capital which is unrepresented by available assets to the extent of 3s. per share upon each of the 151,340 shares which have been issued and are now outstanding, and by returning to the holders of the issued shares paid up capital to the extent of 7s. per share, and by reducing the nominal amount of all the shares in the company's capital from £1 to 10s. per share. Special meetings are called for December and January to pass the necessary resolutions.

* * * *

Harrisdale Diamonds.

The new company recently floated to exploit the alluvial areas on the Harrisdale Estate has now got to work, and preliminary operations are well in hand. The prospects are very favourably regarded, as the estate is known to carry a considerable extent of unworked alluvial gravel.

* * * *

Phthisis and Development.

From authoritative sources we learn that the fight against phthisis has already been productive of excellent results. The Mines Department is satisfied that the dust danger in stopes has practically been reduced to vanishing point and in that sphere of mining few fresh cases of the disease are being caused. Attention is now being directed to development work, and here it is held that drastic changes in present practice will be necessary if the disease is to be stamped out. As is well known, when a contractor on development has blasted the "cut" he almost immediately returns to the face to blast the "round." From the reckless haste with which contractor return for this purpose great danger to his health is feared, and the remedy which the Mines Department have adopted, and intend to enforce, is to forbid the miner to blast the "round" until a later shift. This will, of course, delay progress considerably, and in mines where development is in a backward stage the matter assumes a serious aspect. However, the Mines Department stoutly maintain that the health of the men is the paramount consideration, and that contractors must be saved from themselves. In this attitude, we are glad to learn, they have the whole-hearted support of the chairmen and directors of the mining companies, though mine managers and consulting engineers are naturally less enthusiastic, to say the least of it. True economy is so clearly bound up with the campaign against disease that we have no hesitation in commending the attitude of the Department in this matter.

* * * *

Sakalava Oil Progress.

Preparations are being made to put down a drill hole upon the Maraboalo portion of the property of the Sakalava Madagascar Proprietary Oil Fields, Ltd. According to a report made by Monsieur E. D. Levat, there is a definite anticline on that property, and both flanks are marked by abundant seepages of more or less fluid bitumen oozing from a big bank of coarse sandstone about 15 feet in height. The bitumen flows slowly all the year round, but not in commercial quantity. According to a diagram which accompanies the report referring to this property, the anticline is a comparatively gentle one, the flanks dipping at a comparatively low angle varying between two and five degrees. Even so shallow an anticline as this is sufficient to admit of the collection of quite a large quantity of oil, and M. Levat's sketch shows that the distance between the seepage lines on either side of the elevation is about 1½ miles. This reason, added to the facility of access from the river Manambolo, a stream navigable by light craft, decided the preference of this expert for the Maroboalo anticline for the first boring to be made by the Sakalava Madagascar Company. In view of the more or less unknown character of the Madagascar oil strata, the evidence to be supplied by this borehole, which is considered to be located in a particularly favourable position, geologically, will naturally be looked forward to with a great deal of interest.

* * * *

West Rand Unified.

The operations of this company have been terminated by the abandonment of the claims held by the concern. Although unfavourable opinions were expressed some time ago regarding the prospects of the claims which were selected and obtained by Mr. E. Kumst, it was decided to give the ground the fullest possible trial. This decision was largely prompted by the action of Mr. Gauf, who came forward at a time when public and expert opinion had begun to be emphatically condemnatory, and expressed his confidence in the proposition by putting up a considerable sum of money for exploratory work. This work has been carried out under the supervision of Mr. McMurtry for some months past, but facts are stubborn things and the geological truth, like truth in a general way, inevitably prevails in the long run. We understand that liquidation has not been considered so far, and it is not improbable that other ground of a more favourable kind may be looked for, in order that shareholders and those who have financed the company may have an opportunity of making good their losses.

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Vaal River Pool Diamonds.

After the expenditure of a fairly large sum of money, incurred in the damming and pumping of a long stretch of the Vaal River bed, the operations of the Vaal River Pool people have proved unsuccessful. Although many and glowing reports were obtained regarding the supposed richness of the "pool" which was said to have attracted the attention of river diggers for years past, it was found that the gravel in the bed of the stream was comparatively poor in diamonds. The "pool" was situated on the northern or Transvaal side of the river, and was separated from the southern or Free State side by several islands. It has since been said by some who profess to be experienced in the ways of the Vaal River gravels, that the southern arm of the river should have been tried, inasmuch as the Free State side is generally the better side upon which to look for stones. Whether that would have proved so in this particular case is difficult to say. The company has, nevertheless, not been liquidated. It is not unlikely that the board are contemplating other undertakings, if any of a sufficiently favourable kind present themselves within a reasonable time.

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Refractory Ores.

Speaking at Barberton recently, Mr. Malan, the Minister of Mines, said that the treatment of refractory ores was one of the problems the outside districts had to deal with. That morning he had seen some samples of work done, and these showed most marvellous results. A little bird had told him that a company had been formed to test this new method on a large scale on tons and not on samples. He was hopeful that this discovery would lead to a revolution in the work, and everybody with the interests of the country at heart would hope that it would prove successful. The process, it appeared, could detect all gold shown in samples by the ordinary methods of assay and also smelted extra gold, which otherwise would escape. The Barberton paper says that great interest has been inspired by Mr. Malan's remarks.

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Speculation and the Stock Exchange.

An interesting discussion has been proceeding in the columns of the *Financial Times*, on the dearth of business in the Stock Exchange. A broker makes a valued contribution, with most of which we entirely agree. He points out that it is never the amount of commission or jobber's turn that makes the unsuccessful speculator. "Rather is it attributable to the abject folly of most of the speculative public. One can never get them to buy anything when it is admittedly low and cheap. They only buy when their attention is called to it, firstly, by seeing it rise each day for a week or so, or, secondly, on some tip from an interested party, who already holds. Then they rush in and are surprised that it falls on profit-taking or that it 'sticks' with little or no market. Again, 'they' bite off more than they can chew and have to sell at the very time they should be buying, but, most of all, they will not take a profit when they have one. Pure greed has wrecked many a speculator."

The Miner's Wage in Great Britain.

The Scarborough Conference of the Miners' Federation is to be asked to give its approval to proposals designed to permanently raise the standard of wages in the British coalfield. The "boom" in the coal trade which followed the minimum wage strike of last year has resulted in a substantial addition to the wages of the men employed in the coal-mining industry. These proposals are really only part of a larger wage policy—the establishment of a British Coal Conciliation Board regulating the wages of all the miners employed in British mines. The existing Conciliation Board agreements in England, Scotland and South Wales terminate in March, 1915, and the Federation policy is to bring all the districts within the operation of a single Conciliation Board, with a new wage standard, and a minimum of 7s. per day. It is a big programme, involving important changes in the present methods of regulating wages, with a substantial advance in the minimum wage rate. Whether the proposal is a practical one which can be successfully carried through the coming eighteen months will determine. That it will be pressed upon the coalowners of Great Britain is clear. Hitherto coalowners have shown themselves adverse to any proposal to set up a National Board on the lines of the men's scheme. In the negotiations which led up to the national strike of last year and the passing of the Minimum Wage Act, the whole of the coalowners of Great Britain met in conference with the men, though on several occasions the Scottish and South Wales owners held separate meetings. The negotiations on the regulations under the new Mines Bill were also carried through by the Mining Association of Great Britain, which represents the whole body of owners, with the Miners' Federation representing the whole of the men employed in the mines. But on wage questions there has never been national action on the part of the owners, who have very justly contended that the selling prices and economic conditions vary so greatly as to make a National Wage Board a practical impossibility.

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Transvaal Iron Ores.

The farm Kromdraai, No. 459, district Pretoria, on which rich iron deposits have been proved to exist, is under option to Messrs. Lewis & Marks for £8,000. The farm is some 4,600 morgen in extent, and is situate about 16 miles east of Pienaars River Station, on the Pietersburg line. A sample of iron ore was divided into three parts, and one sent to England, the other two being examined by local chemists. One of the latter shows 85 per cent. of ferric oxide and 6·5 ferrous oxide; the other shows 65·02 per cent. iron. Specifications of blast furnaces of varying types have been called for in Europe, the object being to procure a furnace which will suit South African coal. It is understood that the iron on Kromdraai has been proved over an extent of 4½ miles. The suitability of Kromdraai ore for manufacture has been proved so far by the fact that it is daily used in admixture with scrap in iron products which are being treated at the Vereeniging works.

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Tanganyika Concessions.

The programme laid down by the Union Miniera du Haut Katanga for developing its operations in Katanga has been carried out in a satisfactory manner. The two water-jacket furnaces which have been running simultaneously since the beginning of July last are working under good conditions. The production of copper for the first eight months of the present year has exceeded over 4,000 tons of copper, the cost of production being in accordance with previous estimates. In a cable sent by the manager of that company in Africa, it is stated that the copper produced for July and August since the running of the two furnaces was 1,900 tons. The briquetting of the fine ore is being proceeded with. The construction of the first group of copper coke ovens is expected to be completed in time to start about the end of the present year. The manager states that when these ovens are working and the company making its own coke, the costs (which are now quite satisfactory) will be still further reduced. The technical committee are now engaged in the study of the plans necessary to a large increase of production of copper.

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The Share of Labour.

A writer in the *Financial Times* points out that the Rand has proved no exception to the rule of precious metal mining that the miner and the artisan get by far the largest proportion of the gold actually produced. Since 1887 to the end of last year, just a quarter of a century, the Rand has produced £347,054,851 worth of gold, while the dividends paid to the shareholders over the same period have aggregated £88,159,489. In other words, the amounts received by shareholders represent 25.7 per cent. of the value of gold, or little more than 5s. per sovereign. The balance has been absorbed in working expenditure, white wages, native wages, upkeep and stores. A concern which had the grandiose title Champ d'Or, a distinction not altogether unmerited, paid out only about 6 per cent. of its gold winnings as dividends. A classic mine like the City and Suburban returned less than 30 per cent. of its gold to its shareholders. The East Rand has spent 17 millions to make six of profit. In the very rich section of the Ferreira 55 per cent. went to the artisan, the miner and the merchant and 45 per cent. to the shareholder. Contrariwise, but 3½ per cent. of the French Rand's recovery was distributed as profit, while the Bantjes' ratio was little better than 5 per cent. But the greatest development of what have been aptly termed " workmen's mines " is in the Germiston district. Here we have four and a half miles on the second dip comprising three mines worked with the low range of costs that the highly efficient technical staff of the Consolidated Gold Fields has achieved which have produced six and a-half millions of gold and have paid £100,000 in dividend. With the exception of Debenture interest, the bulk of the balance has gone into the pockets of the workman and the supplier of stores. Whether mines such as these run or stop is a matter of slightest concern to the unfortunate shareholder, but it is of most vital importance to the community. Go a step east and you have a couple of mines with nearly six and three-quarter millions of gold to their credit, whose shareholders have benefited to the extent of just over one and a-quarter millions. In the west the Lancaster has paid less than £100,000, against three and a-half millions of gold.

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The Giant-Cam and Motor Deal.

It has been recently rumoured that a deal had been practically arranged between the Giant Mines of Rhodesia and the Cam and Motor Gold Mining Company with a view to the thorough development of a number of the latter's claims outside those constituting the Motor mine, which will be producing in a few months' time. The official circulars confirming the rumour have now been issued. The advantage of the arrangement arrived at from the point of view of the Cam and Motor is that that company will not have to raise further capital nor to draw upon its pending profits for the further development of the Cam-Good Shepherd line of lode. As to the Giant, it is to be hoped that the option now obtained will result more favourably than have recent developments on the company's properties. The following clause in the agreement has attracted comment:—" The Giant Company may form a new company to take over the claims on the following terms:—(1) Out of the purchase price the Cam and Motor Company will receive £100,000 in fully-paid shares and the balance be divided equally between the two companies, the Giant Company being entitled to fix the amount of the purchase price when exercising the option." Even allowing for the various provisos fully set forth in the circular, it seems curious and not a good precedent to allow the Giant Company practically a free hand in arranging the amount of its intermediate profit in the eventual flotation of the new concern. But since the Giant and the Cam and Motor are under the same control the result would no doubt be much the same whatever the precedure.

TOPICS OF THE WEEK.

PHTHISIS QUESTIONS.

One can sympathise with the leaders of the mining industry in their consternation at beholding the most intimate and intricate industrial problems of the Rand suddenly become the commonplaces of Church councils and Provincial party congresses. Phthisis, for instance, which has so long monopolized the attention of the scientists, actuaries and directors of the mines, has of late been dragged into the arena, and public bodies of all sorts, and varying qualifications, have passed pious resolutions praying for its early eradication, and suggesting amendments in the existing Phthisis Compensation Act. The unique position of the mining industry in this country undoubtedly makes it impossible for it to avoid being a target for all this gratuitous advice; and if the publicity given to its internal affairs leads to an intelligent and more sympathetic understanding of its troubles on the part of the public, the effect may not be wholly without some compensation. Thus, at the Unionist Party Provincial Council meeting this week a long debate took place on the subject of phthisis; and as many of the delegates who spoke represented mining constituencies, it is possible from their views to gauge the direction in which opinions on the subject are tending. The Phthisis Compensation Act has now been over a year in operation, and its shortcomings have had ample time to disclose themselves in practice. It is not possible, therefore, to quarrel with the amendments to the Phthisis Act, submitted to the Council, viz.: (1) In respect of beneficiaries who proceed to reside in the United Kingdom: (a) That the amounts awarded be transmitted to the High Commissioner's Office in London for distribution; (b) that in the various parts of the United Kingdom which supply miners to South Africa (such as Cornwall, Durham and Cumberland), the High Commissioner should constitute local honorary advisory committees, whose functions shall be to advise him, from local knowledge, as to the most beneficial manner of distributing awards; (c) that there should be appointed a medical adviser or advisers to the High Commissioner for the purposes of the Act. (2) That a similar procedure should be adopted in the case of beneficiaries who proceed to reside in British Dominions or Colonies, through the office of the respective Governor-Generals. (3) In the case of beneficiaries who proceed to reside in foreign countries, similar powers could be conferred on British Consular Agents. (4) That steps should be taken to secure more speedy investigation and settlement of claims. (5) That as soon as applicants have been assessed by the Medical Officers of the Board, if the circumstances are urgent, temporary remedial assistance be speedily given. These are all excellent recommendations and will doubtless be accepted by the Government as the outcome of the experience of those most directly concerned with the working of the Act. Moreover, in regard to the measure of compensation there seems to be a general and well-defined desire that the amount payable to sufferers in the first stage of phthisis should be increased. It is said that the Medical Board appointed by the Government favours the doubling of the present allowance under this head; and some authorities, like Dr. Macaulay, recommend the abolition of the first stage class altogether, and the merging of all those affected, to whatever degree, under one head. The question is one for the experts to decide, but it is certain to come before the approaching session of Parliament in some form or another. Other and less important aspects of the question were considered, but the foregoing are those most in the nature of practical politics. If the Phthisis Act is to be amended at all, it is but right and fair that the mining constituencies should have an opportunity of discussing it, and stating in moderate language their views. For this reason the debates of this week are to be welcomed, and they will in due time doubtless produce good fruit.

THE CASE FOR THE CONTRACT SYSTEM.

Last week the case against the contract system as made out by the medical and Labour reformers who would abolish it, was presented very fully in these columns. Opinions, of course, vary very considerably on the question, and we have been at some pains to collect some of the views of those who oppose any change, that is who favour the retention of the contract system. These people argue that the proposal to do away with contracts or piecework is utterly unsound. It is apparently thrown out, they say, by way of concession to the day-labour fetish of the Labour party. Why, it is reasonably asked, should the system of contract be prohibited in one special industry, while there is no provision against it in others? The contract system is either a good thing or a bad thing. If good, it should be retained, if bad, then it should be eliminated, and the Government should bring in a special Bill to prohibit contract in all industries and callings without exception. But it is surely illogical to forbid contract in one industry only, and to allow its continuance in others. As a matter of economic fact it is argued that the contract system is a very good thing, and is much more equitable than the payment of an identical all round wage for day labour. The only possible danger in the practical application of the system is when the labour market is glutted, men are forced into a cut-throat competition with one another to get work, and are ready to tender for jobs at prices that can give them little more than a starvation wage. But there is no possibility of any such abuse of the contract system as it now obtains in the mining industry of the Rand. Every contractor, no matter how little work he may do, can get paid a minimum, below which a man's daily earnings ought not fall, but above which it may rise in proportion to his skill and efficiency. The so-called contract system in force on our mines is really a bonus system, whereby a man gets paid more than the ordinary daily wage according to his results. The skilled man reaps the reward of his skill, and the mine-owner who pays him a bonus benefits by getting the work he wants done with greater efficiency and rapidity than is possible by day labour and a flat wage rate. It stands to reason that the miners do not desire the abolition of a system which cannot reduce, but may augment their earnings; certainly the more efficient men do not. Under the existing system men consistently make higher wages than they could make by day labour; there have been many contractors on the mines whose earnings have exceeded £2 to £3 per shift; the men who can and do command such high wages are the finest and best men in the mining industry. To abolish the contract system simply means to sacrifice these highly skilled men to the less efficient and the comparatively incompetent; to deprive the former of the earnings to which their superior ability entitles them, without adding one farthing to the wages of the latter; and to take away all incentive to proper work by strictly limiting wages. If it is insisted that nothing but day wages shall be paid, the effect of it will be twofold. So far as the mining industry generally is concerned, the standard of work, both quantitatively and qualitatively, will be lowered, for it is hardly in human nature to give the same amount and kind of work for 15s. a shift as for 25s. That will retard mining operations, reduce output and profits, and make the mines less able to pay lower wages for day labour than they are now able to pay the higher rates for contract work. Then, as far as the more competent workers are concerned, their natural inclination will be to get away as soon as possible from a State where a beneficent Government will not allow them to be paid better wages than the less competent, and to go where their skill can command the full remuneration to which it is justly entitled. Finally, it is pointed out that it is a curious—one might almost call it an insane—class of trade unionism that seeks to prevent men from earning high wages and to drive the most efficient workmen out of the country. The Labour Unions in several Australian States have tried to achieve the same object, invariably with the purely selfish idea of eliminating the successful contractor who has always been a difficulty in the way of reducing the men to the same level of mediocrity. To mask their real reason behind a show of anxiety for the health of the miner is said to be merely patent insincerity. It is true that some doctors favour the view of the Unions on the score of health considerations, but doctors are proverbially inclined to differ and as many medical authorities seem to be ranged on one side as on the other. Some interesting correspondence on the subject will be found in another column, and it is hoped to print further important views in our next issue.

LAND FOR MINERS.

The growing desire of miners, phthisis sufferers, and others, for small land holdings is one of the most striking and significant signs of the times. The proceedings at congresses of the Unionist and Labour parties, the attendance at meetings dealing with the subject and the interest evinced in closer settlement all betoken the way men's minds are moving along the Reef. Apparently these people are not to be discouraged by being told that they would not know what to do with land if they had it. They declare they only want the opportunity to show what they can do. The "land hunger" is, of course, not confined to South Africa. In England, Canada, and Australia, the question of "small holdings" is being forced to the front in a manner that cannot be ignored. In Australia, where, doubtless, the agitation in our midst found its inspiration, the various State Governments have recognised the insistence of the need and are taking steps to meet and satisfy it. From Queensland an interesting object lesson comes by the last mail. The Secretary for Mines in the Labour Cabinet of that State has just introduced a new Bill to provide land for miners on easy terms and for increasing the size of the grants of land already made under the law providing homestead leases on mining areas. In explaining the proposed measure, the Secretary for Mines said, *inter alia*:—

> The reason why provision was made for the granting of homestead leases in goldfields areas was for the purpose of effecting permanent settlement upon our goldfields. At the same time, it was realised that such tenures must in no wise affect the rights of the mining population engaged in mining, or mineral occupations, on those particular areas. Then it was recognised, as I have already said, that it was desirable, if possible, to afford people who were engaged in those industries, or others who were settled upon those goldfields areas, the opportunity of acquiring areas of land in which they might engage in occupations other than those of miners. Now, in the older settled goldfields of the State it has long become apparent that gold mining from year to year is becoming a decreasing quantity, and that a large number of persons who had settled in these areas, were in the position that it became essentially necessary that, if they remained in the home that they had made, and their children remained in the district, where they were born and brought up, some other means should be afforded them of getting a livelihood. In the original legislation which made provision for homestead leases, it was recognised that the maximum area of such a lease should not exceed 80 acres, the whole object being that no person should acquire large areas of land which they might use for purposes not contemplated by the Act, because under the provisions which are contained in our present legislation no provision is made for personal residence upon these areas, the only condition being that the leaseholders shall, within a certain time, erect a fence around the particular lease. The first agitation for an alteration in the area of these leases arose in Charters Towers, where, upon one of my visits of inspection, it was pointed out to me that with the decadence in that goldfield the residents and persons who heretofore had been engaged in mining would have to enter into some other occupation, and the occupation most likely to succeed was dairying, or, where there was a sufficient water supply and the ground was sufficiently fertile, agriculture; but owing to the character of the soil in that particular goldfield, the maximum area provided under present legislation was insufficient. The same representation was made to the Premier, and the result of that was that an officer of the Agricultural Department was sent to the district for the purpose of making an inspection thereof as to the best possibility for agricultural purposes and for dairying purposes.

That the conditions are not inapplicable to South Africa may be seen from this extract. The whole subject, of course, is a fascinating one, though in practice fraught with many difficulties. The fate of the Australian schemes, however, cannot but prove of especial interest to us in South Africa, in view of the growing connection between mining and agriculture here.

PROGRESS ON THE TRANSVAAL TIN FIELDS.

The Rooiberg and Zaaiplaats Mines—A Comparative View of Working Costs—Ore Dressing Improvements— The Leeuwpoort Crushing Results.

The appearance of the annual report of the Zaaiplaats Tin Mining Co., Ltd., and the recent publication of that of the Rooiberg Tin Mining Co., Ltd., have again led "the man in the street" to indulge in comparisons in favour of the methods and prospects of one or other of the two premier tin-producing ventures of the Union. It will be remembered that a criticism of the working costs of these companies last year, which was of a rather disparaging kind as far as the Rooiberg undertaking was concerned, gave Col. Dalrymple occasion to discuss this matter *in extenso*, and the point he endeavoured to make, with some success we may admit, was that the manner of presenting accounts in the two cases under review made a safe comparison a work of extreme difficulty. When allowances were made in other directions also, bearing in mind the different character of the ore-bodies at Zaaiplaats and the Rooiberg respectively, and the varying processes of mining and dressing, it would be obvious, he maintained, that the latter company had nothing to be reproached with on the ground of working expenditure, and could easily hold its own, to say the least, with its rival producer in the way of figures. It is not unlikely that the subject will be again referred to at the coming annual meeting of the Rooiberg company, next Wednesday, when, probably, additional interest will be given to the proceedings by a discussion upon the somewhat elaborate and admirably operated dressing plant which has been running more or less steadily during the past year.

THE COST OF TIN PRODUCTION.

In order to make clear the argument regarding the working cost problem the following tabular statement, which shows the respective detailed analyses of expenditure of the Rooiberg and Zaaiplaats companies, is appended:—

	Rooiberg. Per ton treated.		Zaaiplaats. Per ton treated.	
	s.	d.	s.	d.
Mining	7	2	14	5·20
Transport, Sorting and Crushing	2	1	0	11·46
Milling and Concentrating ...	10	1	9	1·79
Drying and Bagging	2	3	1	4·86
Realisation Charges	9	0	0	9·51
General Charges—				
Mine	4	0	1	2·93
Head and London Offices ...	2	6	1	0·52
	37	1	29	0·27

The more important differences are to be found in the charges for mining and realisation. It has already been explained that the items included under this heading are not by any means the same in the two instances under review. The Zaaiplaats Company, for example, do not declare the "returning," or smelting, charges on their tin concentrates, the cost being deducted from the gross value of the concentrates on the revenue side of the account. The working expenditure and revenue account for the year ended July, 1913, shows an amount of 6s. 5·36d. per ton treated, under this heading, so that the total debit to realisation charges should be 7s. 2·87d. per ton treated, bringing the total expenditure, as shown in the statement above, to 35s. 5·63d. instead of 29s. 0·27d. The figures under the head of mining cannot be compared satisfactorily owing to the varying conditions which result from the different character of the ore-bodies and their occurrence. It is interesting, in this connection, to observe that the Rooiberg mining costs have fallen to 7s. 2d. from 11s. 3d. for the preceding year, while at Zaaiplaats they have risen from 13s. 11d. to 14s. 5·20d., the latter, however, being a comparatively unimportant feature. The small item of 11·46d. in the Zaaiplaat's statement is for transport and sorting only, and does not include crushing as does the adjacent figure of 2s. 1d. at Rooiberg. The whole expenditure, from and including tramming up to and including dressing, at each mine respectively, is 12s. 2d. for the latter and 10s. 1·25d. for the former concern. Without a careful enquiry into the circumstances of each mine, it would be invidious to comment upon these items, in spite of the fact that at Zaaiplaats the extraction has risen to over 90 per cent., according to the report of Mr. Gilbertson, the manager, while at the Rooiberg they have been in the neighbourhood of 73 per cent. An appreciable increase in the extraction results are expected from various improvements and additions which have been made and are still in progress at the latter property, and taking everything into consideration it cannot be doubted that the plant is doing excellent work. Before concluding these remarks concerning working expenditure an allusion may be made to the matter of general charges. The difference in favour of Zaaiplaats may doubtless be explained by the fact that disbursements which would come under the heading of capital expenditure at the one mine are included in working costs at the other. Generally, it will be seen that what may be called the total working cost does not vary greatly as between one mine and the other, and averages, roughly, 36s. per ton treated.

DETAILS OF DRESSING.

Later on we hope to be able to give a diagrammatic representation of the ore treatment processes at both the mines under discussion. Considerable changes have been made at Zaaiplaats during the past year, and in connection with the instalment of a new jig the classifying system was re-modelled. Mr. Gilbertson has given a great deal of attention to this question, and one of his first undertakings after his arrival at Zaaiplaats was to deal with the plant upon something like orderly and systematic lines. The situation of the mill does not lend itself conveniently to an elaborate scheme of dressing, and Mr. Gilbertson is to be congratulated upon the success of his efforts. At the Rooiberg the Callow screens which formed a notable unit of the plan of treatment have, we understand, been abandoned. It was found that after a certain running period the sizing efficiency of these screens became impaired, and an undesirable percentage of slime passed to the jigs. Instead of the Callow screens a Stanley classifier has been installed, and it is said that the percentage of slime going with the oversize has been reduced to a comparatively insignificant quantity. A feature of the Rooiberg mill is the extensive use of rag frames for handling the slime. Mr. R. Arthur Thomas, of Dalcoath, has observed that after a careful study of the question of extraction his conclusion is that the percentage of extraction increased in proportion to the surface area of the dressing machinery employed, within limits depending on the physical occurrence of the tin oxide in the ore. It would be interesting to learn how far this view is confirmed by the operations at our two leading tin mines. As far as slime is concerned there appears to be no doubt about the truth of the statement, and the principal method of increasing the percentage of extraction on the slime at the Rooiberg is by increasing the surface area by means of adding to the number of frames, a policy which, we believe, is still being carried out.

THE ZAAIPLAATS' REPORT.

In another part of this issue appears a digest of the Zaaiplaats' report, so that it is unnecessary to dilate at length upon it in this article. We may, however, take the opportunity of saying that we fully concur with the manager, Mr. Gilbertson, when he says, as he does at the end of his report, that "the results for the year must be considered very satisfactory in view of the difficulties which beset operations during the first few months of the year." He continues: "Viewed from the standpoint of future prospects, the experience gained has been of exceptional value. The old idea of the mine as a precarious pipe proposition, dependant upon the behaviour of a few erratic bodies, has been effectively disproved. The future of the mine is clearly in the development of shoots and lenses associated with fissures underground, and in the stripping of the overburden which conceals all indications of new ore bodies at the surface. Exploratory work is proceeding on the correct lines as indicated by the results of the last year's work, and the expansion of operations is expected to counteract the fluctuations which have attended the discovery and loss of ore-bodies in the past." All this indicates a distinctly hopeful feeling, and from our own examination of the mine and knowledge of Mr. Gilbertson's methods we think he is abundantly justified in his view.

LEEUWPOORT.

Not much news comes from Leeuwpoort, and as usual, to make up for the dearth of information, there is much rumour. It is possible, of course, that little attempt is being made to obtain the average grade of ore until the plant has been conditioned.

THE POSITION OF THE GLYNN'S LYDENBURG.

Points from Manager's Report—Reasons for Reduced Profits—Ore Reserves—Prospects for Next Year.

The [illegible] report on operations at the Glynn's Lydenburg property for the year ended the 31st of July states that on development work 7,643 feet were driven, risen and sunk; that the tonnage developed was 19,975 tons, and that the total development at the date mentioned was 48,526 tons, of the value of 11·3 dwts. over 14·6 inches. The ore milled during the period was 40,642 tons, the yield from which was 20,706·369 ozs., the revenue from which was £86,557, or 42s. 7·1d. per ton. Working costs amounted to £48,340, or 23s. 9·4d. per ton, which left a working profit of £38,217, or 18s. 9·7d. per ton. Sundry revenue brought in £3,586, or 1s. 9·1d. per ton, making the total profit £41,803, or 20s. 6·8d. per ton. During the period under review mining has been chiefly confined to the lower portion of Mill Hill section, where most of the ore has been obtained. There may be two years' supply for the mill still to be got here, but as the ore is not distributed at all uniformly, either in width or value, it is difficult to make a reliable estimate, and it frequently happens that in blocks where it is expected to get a good tonnage bad results are obtained, and vice versa. With regard to the top or eastern portion of Mill Hill, our headings show that the formation is hard, and the lode narrow, so that it is not expected to get much more ore in that direction. No developed tonnage has been taken into credit for the South Hill section. The lode being very thin and patchy, no reliable estimate can be made. Ore is being mined here as labour is available. Last year 1,309 tons were mined from this section. Some prospecting work was done in the Compound Hill portion of the mine some time ago, and it was roughly estimated that some 9,000 tons of ore had been partially developed. As the reef is narrow, formation hard, and no facilities at present exist for transporting the ore to the mill, the work has been left in abeyance till it is convenient to link it up with the mill by a tramline or aerial ropeway This tramline will probably come by way of the old No. 2 and No. 5 drives through Mill Hill, which is still kept open for that purpose. On the vergunning claims it was hoped that payable reef would be found to extend into at least a strip of two claims wide from the boundary of the old Glynn's Extension block of claims, but development operations have shown otherwise. It now appears that we can expect nothing from this block of claims. We are still doing a little prospecting work on the extreme southern end of this block, but prospects are not encouraging. A considerable amount of development work has been done in the werf mynpacht section of the mine during the year. At first good results were obtained, and a block of good ore was developed. A poor patch was then met with, which continued for a long distance. I am pleased to say the face of the drive going south is now showing more encouraging results. I think more blocks of payable ore will be opened up again here very shortly. Water troubles have handicapped the work very considerably. In one instance water stopped our main heading, a mud rush caused by the water resulting in filling up the face of the drive, with the result that a new heading had to be started some distance back. As we have a good pumping plant, we are able to continue the work without any serious total stoppage, but an additional pumping set is being put down in a heading going to the dip towards the west, which will permit this heading to be pushed forward. It had to be stopped till this pump was installed, as the drive is going down below the level of the pumping station. These pumps should be able to cope with the water for some time to come. During the year upwards of 4,700 feet of development work were done, in additon to a larger amount of driving in opening up for stoping and sampling. Ten thousand five hundred and sixty-three tons of ore were developed, and 3,137 tons mined and sent to mill during the period under review. In this portion of our property lies our main hope of an extended life for the company. We have plenty of area unexplored, besides some 150 prospecting claims adjoining this ground on the southern boundary. On these claims we are trying the experiment—for this district—of prospecting by [illegible] drill. The brokenness of the ground is against good results being obtained, but I am in hopes that I may get some useful information from this work which may lead to good results. The reef in these claims will probably be under water, so that ordinary shaft sinking without power pumps would not succeed. The plant remains the same as last year, and is in good running order. The water in the top race is lower than ever in consequence of successive dry seasons, so that practically the whole of the machinery is now run from the Sabie power station, which, in additon to supplying our own requirements, supplies four other mines with electric power, and also the lighting for the Sabie township area. Considerable trouble was experienced during the year from storms and lightning, which caused several stoppages at the power station, and considerably interfered with a steady output at the mine. It is hoped that such stoppages will not occur in the coming season, as various improvements have been made. As in previous years the company, during the greater portion of the past year, suffered very considerably from shortage of native labour. This hampered us very much in development work, as in order to keep the mill supplied with ore, labour had to be concentrated on mining work. Every year our labour requirements increase, as the ore is more difficult to mine on account of the reef being narrower. I am glad to say that native labour has been more plentiful during the last two months. The railway line has now reached the Sabie station, and is expected to be open for passenger traffic about the end of October. Goods are carried direct to Sabie at the present time, but the charges are so prohibitive on most articles on the section of railway between Rosehaugh and Sabie that it is cheaper to ride by transport from Rosehaugh, and this is being done. The Sabie township is not yet an accomplished fact, though the application has been granted by the Government. It will probably be only a short time before the final arrangements will be made. A few stands have been disposed of, and water and light laid on. The plantations are in good order. During the year poles to the value of £258 4s. 8d. have been used in the mine. This has effected a considerable saving in the cost of mining timber, as mining account is only charged a nominal sum per pole. Some time ago the plantations were attacked by the bagworm, and fears were entertained that they would be permanently damaged. I am pleased to state, however, that this pest has almost entirely disappeared, and the trees seem none the worse. The rainfall for the season was 36·19 inches registered on 120 days. In consequence the Sabie River is lower than I have ever seen it. It has probably not been so low for the last few years.

Mr. Damant comments on Mr. Aimetti's report as follows:—I have to acknowledge receipt of a copy of Mr. S. Aimetti's report upon the prospects of this mine. I note that he states that the tonnage is of a somewhat higher value than that milled for the past year. It must not be expected that the recovery value will be higher than last year. The values given are assay plan values before the reef is stoped. I think the recovery value should be about the same as that for the past year. South Hill: I do not expect to find any large body of ore in the lower portion of this hill, which Mr. Aimetti estimates at 20 claims, but I quite agree that it should be thoroughly prospected in the manner indicated by him. The reason why it has not been done before is because we have never had the labour to spare; all available labour has been spent in more promising places. Compound Hill: No doubt this will be exploited some day. At present, however, it is not convenient to do so. The matter has always been kept in view. Vergunning Claims: I think it is practically certain that there is very little ore here. We are now trying on the southern end of the block near our intake, but results are not promising. Werf Mynpacht: This is our most promising section. It must not be supposed from Mr. Aimetti's report that we are suffering from want of pumping plant. During the past year our plant has been behaving very well. When the power is off of course the pumps are shut down, and the only way to overcome this is to have an independent plant. This difficulty might be overcome to a certain extent by placing our 10 h.p. gas engine down there as a standby. As we get deeper down we shall probably require more pumps. We have had that experience already, viz., in the drive going down westwards to the dip. I have just got an extra motor and cable. The pump is being installed now. It is true the water has been a great hindrance to us, the boys having to work in water in places, and where flat sheets of diorite are met with mud rushes frequently occur. If not timbered up immediately, a fresh start must be made from some distance back. 150 Prospecting Claims: We are still drilling on these, but the contractor has had a lot of trouble with his drill. He has just made a fresh start. If he fails it will be necessary either to sink shafts or else guarantee him 1,500 feet of drilling, when he will purchase a drill of another type. Before suggesting anything, I am waiting results of this hole. I think Mr. Aimetti has placed the true position of affairs at the mine before you.

MANAGER AND STAFF OF THE NEW GOCH GOLD MINE.

Reading from left to right.

Front Row: M. Summerfield (Acting Chief Timekeeper), J. Baumann [illegible], H. J. Lee [illegible] [illegible], C. K. Th[illegible] (Mine Captain), Geo. G. Holmes (General Manager), W. Wallace (Chief Engineer), E. J. S. Bolton (Business Manager), G. O. Paterson (Chief Surveyor), H. Tearne (Shift Boss).

Second Row: T. Watson (Assistant Storekeeper), M. Richards (Shift Boss), A. [illegible] (Acting Foreman Timekeeper), D. D. Lynch (Hospital Superintendent), T. R. Thorburn (Foreman Smith), R. J. Richards (Foreman Fitter), S. E. [illegible] (Mine Captain's Clerk), W. [illegible] (Shift Boss), F. [illegible] (Shift Boss).

Third Row: T. R. S[illegible] (Assistant Engineer), C. C. Hayward (Assistant Timekeeper), S. R. Parker (Chief Sampler), M. J. [illegible] (Assistant Compound Manager), R. E. Lagerwall (Compound Manager), H. R. C. Wood (Chief Assayer), H. H. [illegible] (Assistant Storekeeper), J. B. [illegible] (Shift Boss).

Back Row: J. [illegible] [illegible], J. L. [illegible] (Assistant Assayer).

THE COAL INDUSTRY OF SOUTH AFRICA AND THE WORLD COMPARED.

Instructive Statistics Reflecting the Production of Coal in the Principal Countries.

A LARGE body of comparative statistics, covering South Africa and all the chief coal-producing countries except China, is published annually by the Board of Trade, and is extensively quoted in foreign journals. The most important coal-bearing countries are the United States, Great Britain and Germany, whose output is very considerably in advance of any other country, the production of France and Belgium which come next being relatively small, whilst those remaining contribute but feebly to the aggregate yield of the world. The subjoined table exhibits the production of each country since the year 1900, expressed in thousands of tons:

	Annual Average.				
	1901-05.	1906-10.	1909	1910.	1911.
United States	303.033	405.851	411,432	447,854	443.025
United Kingdom	229.007	261,727	263,774	264,433	271.899
Germany	113 106	143,573	146,397	150,372	158,164
France	32,261	35,585	36.519	37.030	38,023
Belgium	22,533	23.273	23,140	23,532	22,683
Russia	17,513	24,628	26,232	24.460	22,824
Austria	11,558	13,516	13.493	13,553	14,139
Hungary	1,182	1,264	1,375	1,281	—
Sweden	303	287	243	298	307
Japan	10,175	14.265	14.806	15,429	15,763
British India ...	7,626	11,523	11,870	12,047	12,716
Canada	6,935	9,745	9,376	11,526	10.082
Australia	7,041	9,283	8.186	9,759	10,550
New Zealand	1.427	1,906	1,911	2,197	2.066
Cape Colony	167	109	92	88	79
Natal	773	1,704	1,787	2 295	2,392
Orange Free State	102	398	420	419	431
Transvaal	1,724	2.926	3,235	3.549	3.878

With the exceptions of Belgium, Russia, Hungary, Sweden and Cape Colony, every State shows an increasing production. Statistics for comparison are not available for 1912, but the principal producers show an increase over 1911. The world's total yield of coal during 1911 was admittedly about 1,050,000,000 of tons. The expense of getting and raising a ton of coal has in nearly all countries increased since 1886, when it was 4s. 10d. in Great Britain, 5s. 2¼d. in Germany, and 6s. 4¼d. in the United States. The following table indicates the price per long ton at the pit's mouth since 1900 in English currency:—

	Annual Average.				
	1901-05.	1906-10	1909.	1910.	1911.
	s. d.	s. d.	s d.	s. d.	s. d
United States ...	5 10½	5 10	5 7½	5 10¼	5 10¾
United Kingdom	7 10½	8 3½	8 0¾	8 2¼	8 1¾
Germany	8 9½	9 10	10 2½	9 11¾	9 1¼
France	11 6¼	12 2¾	12 5½	12 3½	—
Belgium	10 10	12 6	11 8¼	11 10¼	12 0
Russia	7 8	10 4¼	—	—	—
Japan	6 1¾	8 6½	8 0¼	6 8½	—
Austria	7 2½	8 2¼	8 8¾	8 7	8 5¼
Hungary	9 0½	10 4½	10 10¾	10 10¼	—
Sweden	8 11¼	8 11¾	8 9¾	8 8	8 7¼
British India ...	3 7	4 6¼	4 8¼	4 1	3 11¼
Canada	9 3	10 6¼	10 10½	11 0¼	10 9
Australia	7 1½	7 1¼	7 6½	7 6½	7 5½
New Zealand ...	10 9½	10 8½	10 10½	11 1¼	10 10¼
Cape Colony ...	19 4½	16 3¾	14 4¼	13 7¾	12 11
Natal	13 5½	7 10½	7 1¼	6 0	6 0¾
Orange Free State	10 9½	6 4¾	6 0	6 3½	6 4¾
Transvaal	8 6	5 11	5 8	5 6¾	5 3¼

Cape Colony, France, and Belgium possess the unenviable distinction of paying the heaviest price for their coal, closely followed by New Zealand, Canada, and Germany. The three great producers exhibit a notable difference, the ton of coal costing most in Germany and least in the United States, making its fuel, if the Transvaal and British India be excluded, the cheapest in the world. The coal of British India is inferior in quality to that of Great Britain; the best coal of the United States and the United Kingdom must be deemed equal and even superior in quality to that derived from the seams of France and Belgium. It is interesting to compare the output of the various States with the population. The United Kingdom produces the largest tonnage per inhabitant—but a large proportion is exported—and Cape Colony the smallest. The subjoined synopsis displays the development of the yield of coal in tons per each head of population in the countries specified:—

	Annual Average.				
	1886-90.	1901-05	1906-10	1910.	1911.
United States ...	2·06	3·75	4·56	4·87	4·72
United Kingdom	4·60	5·42	5·93	5·89	6·00
Germany	1·32	1·92	2·28	2·32	2·41
France	·57	·82	·91	·94	·96
Belgium	3·11	3·23	3·16	3·17	3·02
Russia	·05	·12	·15	·15	·15
Japan	·05	·22	·29	·30	·31
Austria	·34	·43	·48	·47	·49
Hungary	·05	·06	·06	·06	—
Sweden	·04	·06	·05	·05	0·6
Canada	·49	1·21	1·49	1·67	1·40
Australia	1·15	1·81	2·21	2·23	2·35
New Zealand ...	·96	1·74	2·02	2·21	2·03
Cape Colony	·02	·07	·04	·03	·03
Natal	·10	·75	1·47	1·94	2·01
Orange Free State ...	—	·25	·84	·81	·82
Transvaal	—	1·34	1·91	2·15	2·31

The United Kingdom employs the greatest number of men engaged in coal mining. The personnel, including surface men and miners, in 1910 amounted in the United States to 725,000, in the United Kingdom to 1,027,500, in Germany to 621,000, in France to 196,800 and in Belgium to 143,700. The quantity of coal produced by each employee during a twelvemonth is remarkably divergent. The United States stands pre-eminent in this respect with 613 tons, followed by New Zealand, Canada, and Australia with 485, 394, and 481 tons respectively, Cape Colony being the lowest with only 71 tons. The table below shows the average output in tons for each person employed, both at grass and underground, during the years indicated:—

	Annual Average.				
	1886-90.	1901-05	1906-10	1910.	1911.
United States	400	543	596	618	613
United Kingdom ...	312	281	276	257	260
Germany	272	240	249	242	—
France	209	196	191	188	—
Belgium	177	165	163	164	157
Russia	139	154	150	—	—
Japan	96	125	109	112	—
Austria	181	172	188	183	191
Sweden ...	138	142	142	146	144
British India	60	82	100	104	109
Canada	341	495	439	453	394
Australia	333	437	462	449	485
New Zealand	359	474	470	478	481
Cape Colony	109	68	59	59	71
Natal	104	164	211	229	243
Orange Free State ...	—	—	309	302	274
Transvaal	—	249	304	350	439

With reference to the transportation of coal, the table appended exhibits the imports and exports of the principal countries during the years 1910 and 1911 in tons:—

	1910.		1911.	
	Imports.	Exports.	Imports.	Exports.
United Kingdom	48,000	84,542,000	41,000	87,081.000
Germany	12,252,000	32,398,000	11,907,000	36,634.000
United States	2,249,000	15,271,000	1,353,000	18,956.000
Japan	206,000	4,936,000	222,000	5,223,000
Australian Commonwealth	309,000	2,831.000	10,000	3,144.000
South African Union	70,000	1,317,000	61,000	1,360,000
British India	344,000	890,000	331,000	874,000
New Zealand	232,000	277,000	188,000	224,000

South African Coal Depots (Capetown), Ltd.

This company was registered in London on September 22, with a capital of £3,000 in £1 shares, to carry on the business indicated by the title. Private company. The number of directors is not to be less than two nor more than four; the subscribers are to appoint the first. Qualification, £100. Registered office, 9, Great St. Helens, London, E.C.

THE YEAR AT ZAAIPLAATS.

Points from Annual Reports—New Water Scheme Contemplated—Working Profit, £80,180.

Zaaiplaats results for the year ended July 31 were as follows:—Mill of 15 stamps ran 263·99 days; ore mined, 42,242 short tons; ore delivered to T.C.L. in terms of lease, 4,312 short tons; ore sent to surface dumps, 2,723 short tons; waste sorted out (9·41 per cent), 3,313 short tons; ore crushed, 31,894 short tons; sands and slimes residues re-treated, 7,400 short tons; concentrates produced, 1,049·7 long tons; ex current ore, 986·4; ex residues re-treated, 63·3; average grade of concentrates, 70·12 per cent. metallic tin; average grade of current ore treated, 2·75 per cent. metallic tin; average grade of residues re-treated, 1·03 per cent. metallic tin. Owing to a shortage of water caused through the severe drought which occurred during the winter months, the output for the year is slightly reduced. The new slimes plant was brought into commission during December. The slimes put through this plant were withdrawn from the poorer section of the dump and therefore did not represent the average grade of the total accumulations. Consequently the quantity of concentrates produced from this source was comparatively small. The capital expenditure referred to in the last annual report has been met during the year under review. This expenditure necessitated the borrowing of a certain amount of money, and the directors entered into arrangements with the company's bankers for the advance of the necessary funds. This advance was liquidated out of profits at the end of March last. The total amount charged to capital account during the year was as follows:—Property, £20; machinery and plant and buildings, £8,864; less machinery sold, £501; livestock, vehicles and furniture, £255; less depreciation written off, £20; total, £8,618. The financial position of the company at the close of the year was in a satisfactory condition and is clearly reflected in the balance sheet. The working profit for the year amounted to £80,180 3s. 5d. A further amount of £262 8s. 11d. was derived from rents, etc., while the following additional expenditure has had to be written off:—Government royalty, £4,010; directors' remuneration, £2,920; interest, £700; leaving, with the amount carried forward from the previous year and depreciation reversed, a balance for appropriation of £81,316 2s. 5d. This amount has been dealt with as follows:—Dividend No. 12. £27,000; mine development account written off, £5,977; ore mined reserve account written off, £11,215; expenditure on fixed assets transferred, as detailed in the balance sheet, £28,227; amount carried forward, £8,896; total, £81,316. Depreciation written off fixed assets in previous years has, during the year under review, been reversed. This has been done in order to show the fixed assets of the company in the balance sheet at cost. In dealing with the accounts of a mining concern it is now clearly recognised that the most approved and modern practice is to transfer from appropriation account all expenditure on fixed assets in excess of the capital provided instead of following past methods of arbitrarily writing down such assets. In this way the balance unappropriated at the end of each year will correspond with the sum available in the form of cash and other liquid assets, and anomalies such as showing a large unappropriated balance with a relatively small amount of available cash are avoided. The directors have to report that they anticipate no large capital outlay during the current year beyond the cost of establishing a permanent and satisfactory scheme for conserving water. The Chairman, in his speech at the last annual meeting, stated that the Board had decided to in future declare the ore reserve position "in terms of the superficial area of payable faces exposed together with the average value." This was decided upon on the recommendation of the mine manager. Since that date the manager has gone more fully into the question, and, owing to the change in the nature of the ore occurrences and the numerous small offshoots, he finds that it is absolutely impracticable to represent the position of the mine in that way. Moreover, owing to the peculiar nature of the ore deposits he has strongly recommended the board to in future only declare as reserve ore such ore as is actually mined and placed on the surface dumps, and that no attempt be made to estimate the tonnage of ore *in situ*. The figures, therefore, given by him and which the board wish to point out do not represent the total reserves of the company are as follows:—Payable tonnage at grass, 14,500 tons; payable residues available for re-treatment, 52,600 tons: total, 67,100 tons.

Water Supply.

The water supply is obtained from the Sterk River, a distance of about four miles from the treatment plant. Owing to the severe drought which took place towards the end of last year, the question of establishing some means of conserving water is receiving the earnest attention of the directors. Temporary means have been established, but it is recognised by the directors that it is advisable to instal a permanent scheme for conserving sufficient water to supply the plant during the dry months. With this object in view the manager has been instructed to prepare a scheme for the consideration of the board. During the year under review dividend No. 12 of 45 per cent. was paid. You will be asked to confirm the action of the directors in paying this dividend. The total amount paid to shareholders since the inception of the company in 1908 is £276,000, being equivalent to 460 per cent. on the capital of the company.

Legal Decisions Affecting Mining.

IMPORTANT CROWN MINES APPEAL DISMISSED.

SAMUEL EVANS v. REX.

This was an appeal against a conviction under the Mining Regulations, 1911. obtained in the following circumstances: The appellant was the managing director of the Crown Mines, Ltd., and as such the "owner" under the Mining Regulations of certain claims formerly belonging to the Paarl Central Gold Mining Company, Ltd., which were traversed by two gold-bearing reefs, the South Reef and the Main Reef Leader. Prior to the war the Paarl Central Company had worked the South Reef, and made a considerable excavation, which during the war period became filled with water and debris. In 1901 the Military Authorities laid a railway line across the surface of the claims, for which the Government obtained a servitude of right of way in 1905. The Crown Mines Company acquired the claims from the Paarl Central Company in 1909, and in 1912 applied, in terms of the Mining Regulations, for leave to undermine the claims, no mining work having been done therein since 1899. As preparation for its proposed mining operations the company had pumped out the water from the excavated portion of the claims and removed the debris, and the Inspector of Mines, being of opinion that the railway on the surface had thereby been deprived of the support which it formerly had, directed the company to pack or sand-fill the excavation. The company agreed to do this in regard to all new workings, but contended that it was not liable under the regulations to fill up the excavation made by the Paarl Central Company before the railway was laid. The Magistrate held that the appellant's refusal to comply with the direction of the Inspector of Mines constituted a breach of the regulations, and imposed a nominal fine of 10s., the case being treated as a test one. Mr. S. S. Taylor, for the appellant, contended that the laying of the railway in 1901 was illegal, inasmuch as the claims had then already been undermined, and that it was unreasonable that the company should be compelled, in consequence of the Government's illegal action, to do something which it would otherwise not have been bound to do. Mr. Van Heerden, for the Crown, was not called on, and the Court dismissed the appeal, holding that the action of the Crown Mines Company in removing the water and debris from the existing excavation brought it within the regulations.

The manager of the Romola Nigel mine reports that he has resumed crushing, and that up to October 15 the mill ran 124 hours and crushed 120 tons. The recovery from the plates was 138 ounces. Cyaniding has not yet been started.

THE POSITION OF THE EAST RAND MINING ESTATES.

Value of the Far Eastern Rand—Details of Developments.

THE ordinary general meeting of the East Rand Mining Estates, Ltd., was held in mail week in London, Mr. Charles F. Rowsell (Chairman of the company) presiding. The Secretary (Mr. Alfred D. Owen) having read the notice convening the meeting and the report of the auditors, the Chairman said : Before dealing with the present position on the Far Eastern Rand, I will refer briefly to the balance sheet and profit and loss account. Taking first the profit and loss account, you will see that our revenue from various sources amounted to £5,555, as compared with £3,731 last year, the increase being mainly due to farm revenues. After paying all our expenses, we are able to carry forward the sum of £3,725 to the balance sheet, as against £2,071 last year, with the result that the whole of the debit to profit and loss account which had accumulated in the earlier years of the company has now been wiped out, and the profit and loss account has the small credit of £338. Turning to the balance sheet, there is very little change to record in the position. The amount of our cash continues to increase. We had on deposit last year £59,500, and we have this year £60,850, while the loan to the Grootvlei Proprietary Mines has increased from £11,100 to £12,280. You will see, therefore, that the company's financial position is slightly better than it was last year, which, of course, is satisfactory. *The Assets.*—Turning now to the company's assets, I reminded you last year that we owned 20,249 acres of freehold land. This has now been increased to 21,146 acres. Land in the district in which is situated that owned by your company continues to increase in value, and the surface rights alone of these properties undoubtedly constitute an increasingly valuable asset. Your chief interests are clearly stated in the directors' report. The mineral rights over the farm Grootvlei are owned by the Grootvlei Proprietary Mines, Ltd., in which you hold a share interest of 253,020 shares. As you are aware, the existence of the main reef series over the whole of this property has been proved by boreholes at a depth varying between 2,000 feet and 4,000 feet. The Grootvlei Proprietary Mines have a claim area on the best portion of the farm Grootvlei amounting to 1,135 claims. The farm Palmietkuilen—of which your company owns five-eighths—is also a proved mineral-bearing farm, and the owners will be entitled to take out a mynpacht equal to about 1,283 claims, in addition to a further 150 claims as discoverer's rights. I regret that although the conditions on the Far Eastern Rand continue of the most satisfactory character, the market position has remained so unsatisfactory that it has been quite impossible to arrange the necessary finance to enable the Grootvlei Proprietary Mines to resume shaft-sinking and to equip their mine. The year through which we have passed has been one of continuous troubles—both troubles in Europe and local troubles in South Africa. These are so well known to you that it is unnecessary for me to dilate upon them ; but you are fully aware that they have had a disastrous effect upon markets generally, and even the best established companies have suffered heavily from the natural hesitation on the part of the public to invest under the conditions which have existed. No doubt there are other reasons as well for the present state of the market, but I do not propose to dwell upon them. It does seem to me, however, that there is every reason to believe that now that most of these troubles have either been cleared away or else are gradually being dispersed, we may at last look forward to better market conditions ; and I personally feel strongly that, when these better times do arrive, the Far East Rand will be one of the first districts which will interest the public, because, after all, the Witwatersrand has proved itself without a doubt to be the most consistent and reliable gold-producer in the world, and the Far Eastern section of the Rand bids fair to fully maintain the reputation of the Witwatersrand as a whole. *Developments on Neighbouring Properties.*—The following figures will, I think, convince you that in making this statement I am not speaking without substantial ground for my remarks. I reminded you last year of the various companies which were operating in the near neighbourhood of the Grootvlei and Palmietkuil farms, and I think it will interest you if I give you a few later figures regarding the position of these properties. They are as follows :—

Company.	Ore Reserves.	Value per Ton.		Width.	Cost per ton.	Dividends to end 1912
	Tons.	Dwts.	s. d.	Ins.	s. d.	
New Kleinfontein ...	1,190,663	7.59	—	46.4	19 5	£1,347,375
New Modderfontein	4,067,000	8	—	59	18 8	1,247,500
Modderfontein B ...	2,600,000	—	33 3	54	—	140,000
	361,000	—	15 11	—	15 11	—
	2,961,000					
Van Ryn Deep	1,278,003	7.1	—	51	—	—
Brakpan	2,457,000	6.74	—	58	—	300,000
	1,808,000	2.27 (unpayable)			—	—
	4,263,000					
Geduld . .	1,475,000	6.98	—	52.8	—	—

You will see that, taking the six properties to which I have referred —which are the nearest properties to ours—they have total reserves of 13,428,666 tons, and that they have to the end of 1912 distributed dividends amounting in all to £3,034,875. We next come to two properties that have been developed more recently. First, there is the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd. The reef on this property has been cut in two shafts, at depths of 2,395 and 2,273 feet. In the former the ore averages 7.15 dwts. over 31 inches, and in the latter 7.7 dwts. over 21 inches. In the Springs mine the reef has been cut in one shaft at 3,432 feet, and the value of the first 445 feet of the drive sampled was 12 dwts. over 34.27 inches. It is an interesting point to notice here that at the greater depth at which the reef was struck in the Springs mine higher values were disclosed than in the Government Gold Mining Areas at a lesser depth. The Daggafontein Company—situated to the south of Grootvlei, thus practically affording us evidence all round us—is sinking a shaft close to a borehole which disclosed the reef at a depth of 3,561 feet, assaying 24.58 dwts. over 6 inches. The Springs and the Geduld properties both adjoin Grootvlei, so that the results obtained are very satisfactory. The Geduld Proprietary Mines are gradually increasing their monthly profits, and a dividend is foreshadowed. The developments on the Government Gold Mining Areas to which I have referred are considered so satisfactory by the management that a plant to crush 50,000 tons per month is to be erected at once, so arranged as to be capable of being increased to treat 100,000 tons per month. The Van Ryn Deep has already been equipped to crush 40,000 tons per month. As I stated before, I think these facts point conclusively to the great value of the Far Eastern Rand in which our properties are situated ; and I cannot also help feeling that the results which are being obtained in this district will make it interesting to the public when markets again improve. You must recollect that the East Rand Mining Estates is interested in a very large area indeed, and as soon as we are in a position to raise the necessary working capital our interests should become of enormous value. The Chairman concluded by moving the adoption of the report and accounts. Mr. C. Guy Pym seconded the motion, which was carried unanimously. The retiring directors (Messrs. C. Guy Pym and Isaac Lewis) and the auditors (Messrs. Cooper Bros. and Co.) having been re-elected, the meeting terminated.

May Consolidated.

During the quarter ended September 30, 44,700 tons were milled at the May Consolidated mine, and gold of the value of £37,977 (16s. 11·9d. per ton) was recovered. The working cost was £28,422 (12s. 8·6d. per ton), leaving a working profit of £9,554 (4s. 3·3d. per ton). No capital expenditure was incurred during the quarter.

Geduld Proprietary.

At the Geduld Proprietary Mines 40,810 tons were crushed, and gold of the value of £56,630 (27s. 9d. per ton) was won. The working expenditure (including mine development redemption) was £62,239 (30s. 6d. per ton), showing a working loss of £5,609 (2s. 9d. per ton). The expenditure on capital account was £15,853 13s. 1d. This amount has been expended on the enlargement of the plant and arrangements necessary in connection therewith. The funds for this purpose were provided for by the last issue of shares. For the three months ended September 30, the footage sampled on the reef totalled 1,205 feet, assaying 11·9 dwts. over 30·9 inches. The results for the quarter are due entirely to the month of July, when a loss of £13,880 was suffered, which was caused by the complete stoppage of work for a fortnight on account of the general strike of employees, and the change over to the new plant.

Zaaiplaats Tin Mining Co

The directors of the Zaaiplaats Tin Mining Company notify the declaration of an interim dividend (No. 13) of 25 per cent. (1s. 3d. per 5s. share), payable to shareholders registered on the 31st of October. Payment of dividend will be made as soon as possible after London transfers have been received. The amount to be distributed is £15,000.

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PROGRESS ON BARNATO MINES.

Excellent Development Results from Several of the Leading Producers—State Mines and Van Ryn Deeps the Features.

The quarterly returns from the mines of the Johannesburg Consolidated Investment Company group contain several excellent features.

Van Ryn Deep.

At the Van Ryn Deep the gross profit was £31,557 8s. 10d., and the expenditure on capital account amounted to £67,717 1s. 5d. Milling was started on the 14th July, and the running of the plant has proved most satisfactory. The tonnage milled is smaller than might have been expected, but operations have been handicapped owing to the dislocation of the native labour supply consequent upon the strike of the white employees at the beginning of July. The mine has also suffered from the late delivery of the electric hoists for the incline shafts. The hoist in the east incline was only put to work at the end of September, and the west incline hoist will probable not be ready until November. The results obtained to date are most gratifying, and promise well for the future. The development continues to expose ore of high grade. 1,982 feet were sampled, of which 1,697 feet were payable and of an average value of 28·1 dwts. over 18 inches of reef, and 285 feet unpayable at 5·3 dwts. over 13 inches. The ore reserves were increased by 20,147 tons.

At the New Primrose the gross profit was £54,236 0s. 4d.; less capital expenditure, £220 3s. 11d.; net profit, £54,015 16s. 5d. The results for the quarter were adversely affected by the strike which occurred amongst the mine employees early in July. There was very little change in either the working costs or grade as compared with the previous quarter, but the quantity of ore milled was less by 4,300 tons, with the result that the gross profit showed a reduction of £2,966. A greater quantity of accumulated slime was treated, and there was an increase in the profit from this source of £472.

At the Glencairn the quantity of ore milled was less than that for the previous quarter by 4,876 tons. This was entirely due to the strike which occurred amongst the mine employees early in July. Fortunately, there was a slight improvement in the grade of the ore crushed, so that the gross profit was only reduced by £320. Working costs were unchanged. The development of the Knights Tribute section, which has yielded fairly satisfactory results, is now almost completed.

At the New Unified the gross profit was £13,996 12s.; less capital expenditure, £889 17s. 7d.; net profit, £13,106 14s. 5d. The results for the quarter were adversely affected by the strike which occurred amongst the mine employees early in July. The quantity of ore milled was less by 1,215 tons, and as the grade of the ore was lower, the gross profit was less than that for the previous quarter by £1,480. The development of the South Reef continues to expose satisfactory values, and the grade of the ore reserves is being maintained. It is anticipated that working costs will show a reduction during the ensuing quarter, and this will permit of lower grade rock being milled at a profit.

At the New Rietfontein the gross profit was £1,989 13s. 5d.; less capital expenditure, £1,245 11s. 9d.; net profit, £744 1s. 8d. The results for the quarter were adversely affected by the strike which occurred amongst the mine employees early in July. As compared with the previous quarter, the gross profit was reduced by £5,690. The grade of the ore sent to the mill was very low, and the margin of payability was slight. The returns for September were, however, more hopeful, and there are indications of an improvement in grade. Better values are also showing in several of the development ends. No. 1 shaft was sunk 56 feet to a total inclined depth of 1,784 feet, and the driving of the 14th level has been started.

At the Ginsberg the gross profit was £16,824 19s. 8d.; less capital expenditure, £976 0s. 8d.; net profit, £15,848 19s. The results for the quarter were adversely affected by the strike which occurred amongst the mine employees early in July. The tonnage milled was lower by 3,155 tons, and working costs were increased by tenpence per ton, and although ore of improved grade was sent to the mill, the gross profit was less than that for the previous quarter by £1,766. Towards the end of September the accumulated slime plant was started up, and the next quarter's returns should show a moderate profit from this source. Development in the north section of the mine continues to show satisfactory values. The crosscut to the reef at the tenth level, north shaft, has been advanced 103 feet.

At the Consolidated Langlaagte the gross profit was £60,217 17s. 9d.; less capital expenditure £5,784 18s. 4d., and Debenture interest £4,125; net profit, £50,307 19s. 5d. The results for the quarter were adversely affected by the strike which occurred amongst the mine employees early in July. As compared with the previous quarter the tonnage milled was less by 15,000 tons, and there was a slight increase in working costs. The grade, however, was practically unchanged, and the gross profit was only reduced by £8,543. A considerable exodus of natives was experienced generally throughout the Rand, as a result of the strike, and the reduction in the labour force on this mine was exceptionally heavy. The total number of natives employed at the 30th June was 3,438, and this number had fallen to 2,675 at the 30th September. Shaft sinking and development operations had, therefore, to be curtailed. The east incline shaft was sunk 44 feet to a total depth of 2,779 feet, and the west incline was sunk 41 feet to a total depth of 2,640 feet. The bulk of the development was carried out from the east shaft, and ore of good grade was exposed.

State Mines.

South-East Shaft: This shaft was sunk 46 feet during the quarter, attaining a total depth of 3,730 feet. The main section was completed and work is proceeding on the permanent ore bins and the pump stations at 1,800 feet and 3,593 feet. The footage on station and development work was 834 feet, of which 40 feet were on reef averaging 70 inches width and 10.6 dwts. value. South-West Shaft: This shaft was sunk 237 feet during the quarter, attaining a total depth of 3,613 feet. The quantity of water increased very heavily during the quarter, and in July sinking was stopped for six days whilst a pump and compressed air column were being installed to cope with the water. The top leader of the Main Reef was struck on the 30th September at 3,608 feet, and the Main Reef on 1st October at 3,614 feet, assaying 3.8 dwts. over 30 inches. *Development.*—North-East Shaft: The total footage driven, risen and sunk during the quarter was 2,497 feet, of which 980 feet were on payable reef, averaging 35.2 inches and 12.3 dwts. value. 790 feet were on unpayable reef, averaging 9.7 inches width and 9.0 dwts. value. 160 feet were on reef only partly exposed, averaging 41.9 inches width and 2.4 dwts. value. 567 feet were off reef. North-West Shaft: The total footage driven, risen and sunk during the quarter was 2,896 feet, of which 640 feet were on payable reef, averaging 28.3 inches width and 9.0 dwts. value. 1,050 feet were on unpayable reef, averaging 13.3 inches width and 5.9 dwts. value. 170 feet were on reef only partly exposed, averaging 24.4 inches width and 5.2 dwts. value. 1,036 feet were off reef. The connection drive between the North-East and North-West Shafts was holed in August. *Surface Equipment.*—The new 50-drill compressor, with boiler, economiser, and induced draught plant at the North-West Shaft was completed, and is now running. Foundations for new 50-drill compressor and an additional steam hoist at the South-East Shaft are completed. Eight semi-detached married quarters were completed, and also an additional room at the north boarding-house. The capital expenditure for the quarter was £94,700 9s. 3d.

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Correspondence and Discussion.

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The Cheshire Cat Mine.

To the Editor, *South African Mining Journal.*

Sir,—My attention has been drawn to the enclosed paragraph appearing in your issue of October 11th. I must ask you to be good enough to correct that portion referring to the Cheshire Cat Mine. As one of the owners of this property, I beg to inform you that the Cheshire Cat Mine has never looked better and is in every way satisfactory, and this unwarranted condemnation has done the property considerable harm. Thanking you in anticipation.—Yours, etc.,

N. A. ARNOLD,

Mining Department, N. A. Arnold & Co.,
P.O. Box 315,
Arnold's Buildings, Salisbury,
Rhodesia, 20th Oct., 1913.

[The paragraph in question stated: "The Cheshire Cat looks none too promising." We are pleased to print Mr. Arnold's correction, and much regret the publication of the "unwarranted condemnation."—Ed., *S.A.M.J.*]

Contracts and Health.

To the Editor, *South African Mining Journal.*

Sir,—It gave me very great pleasure to read your interesting article *re* the abolition of contracts for miners. Personally, I feel if the mining Houses could adopt the scheme on an economic basis, it would be the means of curtailing the ravages of phthisis. For instance, the miner who is on contract usually remains underground after the day's-pay men have blasted, therefore inhaling the smoke from the blast, whilst he in turn blasts just prior to the next shift going down; hence they have to inhale the smoke from the "miner" who is after "big cheques," but who nevertheless is slowly, but surely, killing himself, and, worst of all, is doing his level best to kill others as well. Trusting a more able pen will take this matter up. Thanking you in anticipation of inserting this letter in your valuable paper.—Yours, etc.

J. JOHNSON.

Maraisburg,
October 23rd, 1913.

The Evils of the Contract System.

To the Editor, *South African Mining Journal.*

Sir,—The article on contracts in your last issue opens up a question of such vital importance to the gold mining industry that I would crave the indulgence of your columns to give one or two impressions as to the actual evil effect the contract system has exercised over our great industry. In my humble opinion it is to blame for (1) shortage and inefficiency of miners, (2) industrial unrest, (3) insecurity of tenure of employment underground, (4) lack of confidence in and respect towards the management. I cannot expect that you will grant me space to deal as fully with this subject as I would like, and shall therefore treat the question generally and leave your readers to draw their own conclusions as to how the contract system has contributed to the regrettable features enumerated above, and how its abolition would be to the advantage of the industry and the country in general. In common with modern tendency, we have been cursed with the word "rush." When the industry started, miners had to be procured by those engaged to organise the work of gold recovery; instinctively they turned to the experienced miners of America, Cornwall and Cumberland, who were offered extravagant inducements to come over. Had greater care been exercised, it would have soon been found that our natural mining conditions did not call for the highest mining knowledge in order to supply rock for the mill, and these highly-paid miners would have been of much greater utility had they been employed in training willing workers as "rock-breakers." The original miners having left the country or died, we have been continually crying out that we have not enough efficient men to break rock to keep the mills going to their fullest capacity. With the contract system in vogue, the responsibility of adequate and competent supervision, as industrially applied, has been shirked, and the breaking of rock entrusted to a body of men who comprise efficients, semi-efficients, and inefficients. The efficients who do consistently well are frequently cut in their prices, and become wanderers with a grievance, and a poor opinion of their bosses and the heads of the industry: the semi-efficients make good and bad cheques, varying largely on circumstances which they don't control, being dependent chiefly on their native helpers, and sometimes on the nature of their working places; these also become wanderers and men with grievances. The inefficients likewise, all tending to breed doubts and mistrust towards their employers. What effect would the abolition of the contract system have? It would be imperative for the mines to have shift bosses and mine captains with more practical knowledge added to their school of mines training; and let me say here that I am a firm believer in technical education, but believe that the training of a mechanical engineer who works for several years as a practical workman in addition to his technical education, is the line that should be followed in mining work, for the knowledge obtained of the class of men you are supposed to lead is an absolute necessity. If the miners were not on contract, greater attention would have to be paid to every hole drilled, the consumption of stores would be more closely watched, and every effort made to improve the efficiency of the inefficient and make him worth the money he would be paid, for we can presume that with the establishment of Conciliation Boards, and the recognition of trades unions, standard wages would soon be fixed. Further, the inducement to reduce working costs by cutting prices to the limit would be done away with, and the incentive established to get the highest efficiency. Thus the successful manager would be the one who could attract and keep the most efficient workmen, and the credit thus justly earned would redound in a lesser degree on his mine captains and shift bosses. Greater inducements would have to be offered the shift bosses, but they would be qualified men who could really raise the standard of efficiency. I realise fully that there are sure to be many men who have made big cheques on contract who would oppose such changes, whilst I sympathise I would state that the size of a man's cheque is not always indicative of his ability or industry, and even for the sake of many of their fellow-workmen who after working hard in a mine for a month earn cheques of from £2 to £10, is it not worth while to make small sacrifices, which will be to the advantage of the general community? In many cases I know of good miners who cannot estimate what they are earning, and consequently base their expenditure on too high a scale with disastrous results: a fixed wage would be more satisfactory. I feel so confident in my own mind that the contract system is so unsatisfactory on these fields where our mines are not work by skilled miners, who have been born to the work, that it ought to be abolished if only for the reason that under it it is possible for a man to work hard in disagreeable surroundings for a disgraceful recompense: it is cases like these that give the agitators something wherewith to work on the feelings of a public who are keenly sympathetic towards the mine worker. We wish to restore industrial peace; let us therefore advocate the abolition of the contract system as a means towards this great end.—Yours, etc.,

G. G. CARTER.

6, York Street, Berea,
Johannesburg,
October 22nd, 1913.

The Oil Resources of South Africa.

To the Editor, *South African Mining Journal.*

Sir,—Stands South Africa where it did? Mr. Cunningham Craig has come and gone, and he has added not one iota to the sum of our knowledge respecting oil within this great dependency of the Empire. Like a meteoric flash he has crossed the firmament of our mining world, and has vanished into the void. But, despite this phenomenon, we still live and move and have our being. We are not one whit the better for his visit—and we are not one whit the poorer. We are still boring, and we intend to go on boring more than ever, until we prove, by the drill, that Mr. Cunningham Craig is utterly wrong and we are absolutely right. We live in the days of the automobile, the aeroplane, and the Marconigram, and I have little doubt that the up-to-date mining engineer—the "expert," as some people prefer to describe the genus—may soon regard these inventions as essential to his outfit. But I certainly think that the safest and surest way of investigating and proving the mineral resources of a new country will for a long time necessitate a slower method of progress and observation. We can afford to wait for the day when some enterprising "expert" will venture to prospect Mars with a telescope and write a book dogmatising upon a pet and preconceived theory.

A COSTLY FREAK.

South Africa, the country of vast unexplored regions, the Eldorado of the world, and yet the topsy-turveydom of book-conveyed geology, has had recently at least two notable experiences of "inspection" which would be rightly regarded as ridiculous in any other part of the world. Who conceived it, planned it, and authorised it is not my business. But residents throughout the Union will agree that it has been an expensive freak in more than one sense—expensive in the manner of getting an "opinion" and costly beyond realisation in the effect of such an "opinion" upon the development and welfare of the country. Mining development in Natal and Zululand came to a dead stop through the appointment of Dr. Hatch, who was engaged by the Natal Government, before Union, at a fee of four thousand pounds plus expenses, for six months to report upon the mineral resources of such a vast territory. Six months, mark you! It has often been said, and with truth, that the people of South Africa do not realise the possibilities of their own country; but how, in the name of all that is reasonable and practicable, could Dr. Hatch or any other man, in "six months," going almost as a stranger to the colony, speak with any authority upon the country's potentialities in detail in the way of mineral resources? It is beyond comprehension. After a pleasant picnic, during which he was "personally conducted" with lavish hospitality by various Government officials, men of record and red tape, he came, marvellous to relate, to a conclusion that had been known for a quarter of a century by the most unlettered and the most inexperienced in the colony, namely, that Natal possessed payable coal—a conclusion, let me add, that could have been arrived at without going further than the Coaling Station at the Bluff in Durban Harbour. It was indeed a costly opinion, but the damning of everything else mineral in Natal or Zululand, or the equally effective "damning with faint praise," was incalculably more expensive and nothing less than disastrous, for it immediately stopped the inflow of capital and shut down many a promising proposition. I know dozens of practical men who, with the barest means of subsistence, have given their lives to prospecting in Natal and Zululand, and I firmly believe that it only requires the sinews of war in the shape of adequate capital, expended under proper direction, to bring many of the discoveries to the point of commercial success. But Natal paid dearly for the folly of the Hatch commission, and is paying dearly still, while other parts of the world no more highly blessed with natural riches go steadily on, guided only by the lessons of patient, persistent, and practical investigation.

"ELEVEN WEEKS" TO "DO" SOUTH AFRICA.

While this has been the result of a "six months" freak in the smallest of the South African colonies, what are we to think of the "eleven weeks" trip of Mr. Cunningham Craig? Surely this gentleman, totally unacquainted with the country of three years' war wanderings, as many a weary Tommy had reason to know, could never have realised the magnitude of his undertaking when he contracted with the Union Government to report authoritatively on the oil indications and occurrences in a territory as big as the whole of Europe with the exception of Russia. Many a hustling American on his summer vacation has "done Yurrup" mainly by sitting in express trains, with Baedeker as his guide. He has got the advantage, at least, of a network of railways over the continent. But South Africa is widely different. Comparatively speaking, we have a few trunk railways, a few main lines of traffic, and less than a dozen recognised centres of commerce or mining. The rest is the great expanse of the veld, like the prairies of America. We have, moreover, a Mining Department which has not a single oil man in the whole of its constitution. And we have a Geological Department which, probably through Government parsimony, has only nibbled at the fringes of undeveloped fields. It has, indeed, become a trite saying in South Africa that "the country is only scratched." The "scratching" has been going on for at least half a century, and no one can deny that we are still at the threshold of the great future that lies before South Africa as the most highly mineralised country in the world. How, then, could Mr. Cunningham Craig undertake in the space of three months to give an opinion, with all the assurance of dogma, upon such an important factor as the presence of oil—or, negatively, the absence of oil—in an area so vast, so difficult of access, so little trodden, and so virgin in its actual state? I would recommend your readers to pay no attention to mere "holiday impressions" respecting oil possibility in South Africa, but to study such works as "Petroleum: The Motive Power of the Future," by W. S. Tower and John Roberts (Publishers: Hodder and Stoughton). There they will find it recorded that "the salt-miners at Oil Creek, in America, had long been troubled by the appearance of crude petroleum in their brine-pits. But they regarded the presence of the oil as a nuisance, and it was only after the distilling of oil increased the demand for it that any effort was made to obtain it on a large scale." They did not apply to the Government; they did not employ an "expert" to give an "opinion." They called in commonsense as chief engineer; they bought drills and bored for the oil; they got it; pumping apparatus was set up, pipe lines were laid down; refineries sprang into existence, and distribution of the manifold products was organised. So was established the colossal trade which has yielded imperial fortunes and is to-day the envy of the world. Its founder did not spend thousands on the "opinion" of anybody. They went for the stuff, and proved for all time that the drill in the hands of competent, experienced men, and under systematic, skilful direction, is worth a thousand "reports," even if the writers thereof had spent eleven years, to say nothing of eleven weeks, in strolling over the surface.

MAKING FACTS FIT A THEORY!

I have not had the privilege, at the time of writing, of reading any signed report by Mr. Cunningham Craig on oil in South Africa. But I gather from various articles which have appeared in the press that he has allowed the gist of his opinion to pass into the hands of newspaper men. Of course, no one suggests for a moment that oil is to be found everywhere. It can be maintained, however, without fear of contradiction, that in certain districts of South Africa the geological conditions existing are such that the presence of an oil reservoir in the neighbourhood is a certainty. The task before us is to locate and tap these reservoirs wherever they can be found. The "eleven weeks" gentleman, by his own confession, came to South Africa with a preconceived idea as to the occurrence of oil, this being expressed in a theory which he published within the past year in a book entitled "Oil Findings." Now this theory—that of the vegetable origin of petroleum—is by no means accepted by the world of science in general. Its individual supporters are not men of authority. An undeveloped colony cannot be expected to swallow it without question, and, whatever the origin may be, the average Africander will be quite satisfied when he sees the "olie" which has been talked about for more than one generation. Sir Boverton Redwood, it must be remembered, has expressed a very favourable opinion upon certain samples sent to him from the Free State, where I have seen the crude oil trickling in streamers down a perpendicular wall of basalt exposed by a landslide, the dripping coming apparently in leakages through the horizontal cleavages of the basalt. So common is this occurrence near the Drakensberg, and in the Harrismith district, that natives on winter nights pile up blocks of oil-saturated rock as men stack their rifles, and, kindling a fire below, have a glorious blaze by the fire drawing the oil out. Mr. Theunissen, of Ficksburg, also drew my attention to a deposit of Ozokerite (or mineral wax) in the Bethlehem District, which closely resembles that in Galicia. In the Ladybrand District I have often found gilsenite in horizontal veins in the sandstone. Petrified wood and fossil remains are obtainable in many parts, and a notable example was got at Bresler's Flats, in the Winburg District, where the flying dragon (Pterodactylus), measuring eleven feet from tip to tip of the wings, was found embedded in sandstone. The coarse open sandstone, the limestone, the shales and the inky black slate, the salt deposits and sulphur springs, and the "blue clay," so well-known in America, exposed in dongas and on the banks of spruits, are characteristic of well-known oilfields, and their significance for South Africa cannot be overlooked. But to become thoroughly conversant with the veld one must have the patience of Job and the hardihood of Esau. It is well known that occasionally an outburst of subterranean gas brings to the surface a quantity of crude oil, which, for a time, or until the aperture is closed by earth pressure or the force is exhausted, attracts the attention of the wayfarer. At Hoogfontein, in the Ladybrand District, a natural gas explosion in the side of a kopje made, as the owner can testify, a vent from which, temporarily, a stream of crude oil poured into the valley, scaring the natives at work in the fields, who fled shouting that "a big black snake was coming out of the mountain to devour them." At Vrolykheid, near Modderpoort, the owner, Mr. Ulrich, prised open the blocks of basalt and showed me the crude oil lying in the cleavages. I could multiply similar instances in various parts of the country, and it would be difficult to bring forward any hard and fast principle or theory from other parts of the world to apply to every case. Kimberley and the Rand, for diamonds and gold respectively, are unanswerable examples of dissimilarity; for we know that the "blue ground" of Kimberley, the true matrix of the diamond, was originally abandoned as bedrock, and that " experts of a later date condemned the Rand gold reefs as unpayable! Again, the diamondiferous formation of Kimberley differs materially from that in the Transvaal; nevertheless, diamonds—and plenty of them—are found in the Transvaal. The occurrence, character and quality of petroleum also vary in different yields. We have, for example, even in South Africa, the naphtha base and the paraffin base, and there is a wide difference in the class of the by-products. It is impossible, therefore, to lay down any definite, fixed rule, or to state any specific source, in regard to oil, any more than it is to determine the origin of gold or to classify Bendigo and Coolgardie with California or the Witwatersrand. General principles may exist, but local conditions differ; and if Mr. Cunningham Craig, as it appears, went to South Africa as an apostle of dogma—a dogma of his own fathering—then I am afraid he has much to learn, or unlearn, where this wonderful and unique country is concerned. Zanoni is reputed to have been a philosopher who could tell what mineral riches lay below by simply looking, in any particular spot, at the surface of the earth. The Zanoni of to-day is the drill, and the people of South Africa would be well advised if they insist upon the drill having a fair chance before they allow anything so essential to their advancement as oil enterprise to be damned by a casual visit and a mere theory.

THE DRILL ESSENTIAL.

In a case like this, affecting the interests of the Empire as well as those of South Africa itself, we must consider facts. Mr. Craig, in his early career, joined the Geological Survey of Scotland when the late Mr. William Gunn was a notable figure in that department. It was to Mr. Gunn that I became indebted for the foundation of any scientific knowledge that I possess. Close to Edinburgh lie the Broxburn oil-shale deposits, which are being successfully worked as Young's Paraffin and as Broxburn Oil. Mr. Craig, while on the Survey, had no doubt an opportunity of seeing the development of the oil-shale industry. Subsequently he went to Trinidad (in area equal to the average "district" in South Africa), and there, as a geological surveyor, he extended his knowledge in a field which was essentially an oil-shale bed or asphalte deposit. He also visited Burmah, where oil-springs were known to exist, and he is, I understand, consulting engineer to the British Burmah Oil Company. Be it noted, however, that in each case here mentioned Mr. Cunningham Craig's "oil-findings" had already been found before he turned up on the scene. It is easy to report upon a discovery which has already been made, and to suggest or recommend developments as may be necessary. It is quite another matter, as we know by a hard experience in South Africa, to start, often poorly equipped, right off from the beginning of a proposition, and by every foot of sinking or driving, by every shot fired, by every pan or sieve, fight our way to proof, even in the face of adverse criticism and bitter opposition. Mr. Cunningham Craig has been lucky. But it is a tall order if he seeks to pose as the Great Pangandrum of Oil in the whole world, and incidentally brush off the map of possibilities such a big slice of the British Empire as South Africa, simply because it has had the unspeakable audacity not to conform in nature to a law which he himself has laid down. If Mr. Craig had been able to spend a few more weeks on his trip, I have no doubt he would have met many an engineer of proved ability in the country who would have frankly told him that he had to *un*learn much of what he had been taught in Europe and that South Africa had been his real school. All of which leads me to the point, which I reiterate, that salvation lies within the Union itself in the adoption by the Government or individuals of systematic drilling under skilled direction; and I would even go so far as to say that the State should establish an Oil Investigation Department, properly equipped with men and machinery, for the benefit of the country.

PETROLEUM OF WIDE OCCURRENCE.

Oil exists in a much wider area than most people think of, and its importance through recent inventions—notably requiring the use of petrol—is becoming greater every day. Following the great producing fields of Pennsylvania and California, we have Canada, Texas, Oklahoma and Mexico in North America; and Uruguay, Paraguay and Argentina in South America. Another line of operations, if we may use the expression, runs from Scotland through by way of Galicia and Roumania to the Caucasus, the Caspian Sea, the Red Sea and the Persian Gulf. The sands of the desert are now giving up their riches. Even the islands of the Pacific yield their petroleum, especially in Borneo and Japan. If, then, oil exists in countries so dissimilar and so far apart, why should it not be found in South Africa? The subterranean storage of the precious fluid known as "crude oil" has gone on for ages. It ante-dated the mastodon. Oil reservoirs must have existed before oil-shale, because oil-shale is only the caking or hardened saturation of the oil which escaped from the reservoir being broken in some convulsion of nature. In a country where oil-shale is found, as in South Africa, it is reasonable to presume that unbroken reservoirs still exist, and are yet to be found. I have seen oil-shale taken from the beds in the Ermelo and Wakkerstroom districts of the Transvaal yield 40 gallons to the ton and 37 per cent. of sulphate of ammonia; whereas oil-shale from the Broxburn fields in Scotland, by comparison, yielded only 20 gallons to the ton and 13 per cent. of sulphate of ammonia. Why disregard such palpable facts, and why set up—why accept—any one-man theory in the face of illustrations to the contrary that the world provides?

A BLOEMFONTEIN ILLUSTRATION.

I had the advantage of a long association with Mr. J. A. Coryell and the late Mr. E. F. Russell, both men who were steeped in oil experience in Canada and the United States. Mr. Coryell, along with Mr. Taylor, was the discoverer of the oil which is now being developed in Madagascar under the Sakalava, Taylor-Coryell, and other concessions. Mr. Russell unfortunately sacrificed his life to the climate of the island; but Mr. Coryell, who is now surveying in British Columbia, can confirm every geological statement in this letter respecting South Africa. So long ago as 1901 I had come to the conclusion that several areas in South Africa were oil-bearing, and as opportunity offered I steadily pursued my investigations. Mr. Coryell returned from Madagascar in 1907, and joined me in the Free State. The only drilling going on in the Colony at that time was conducted on Bloemfontein Commonage, by the Bloemfontein Oil Syndicate, on the banks of the spruit near Tempe, where remarkably pure oil, naturally distilled by the action of running water, had been brought up at a depth of about 800 feet. Accompanied by Mr. Russell, Mr. Coryell and I examined that part of the Commonage and came to the obvious conclusion that the drilling was in the synclinal instead of on the anticlinal, the synclinal being the hollow and the anticlinal the arch of the strata. Local observers can easily determine this for themselves. The synclinal follows the line of the spruit, near the aerated water factory, which supplied the troops in the adjoining cantonments, who complained of their refreshment from this source tasting and smelling of paraffin! But the anticlinal, or arch, is in the vicinity of where the Gray University College now stands. The accumulation of water in the neighbourhood of the spruit no doubt distils the crude oil as it leaks from the cleavages in the wall, or outside, of the reservoir. To such a degree is this refining process naturally carried out that the sample taken by the Mayor (Mr. Ehrlich), Mr. Hill, a leading solicitor; Mr. Hodges, a public accountant, and others of high repute, and immediately sealed up and sent to London, was pronounced by the home analysts, suspicious of the purity of the oil, to have been "rectified subsequently"! It was, however, absolutely genuine, and Mr. Coryell and Mr. Russell agreed that if boring had been done on the anticlinal, instead of in the synclinal, crude oil would have been reached within a very reasonable depth. Now this is an illustration of what has been done in South Africa through the want of skilled knowledge. Drillers prefer to be near the water and in the hollows, under the wrong idea that they will be nearer the oil; but it is only a waste of time and money, as the true reservoir invariably lies in the cavity provided by Nature under the anticlinal or arch of the strata—usually to be found in South Africa under a gentle rise which the Boers term a "bult."

SUGGESTED OIL SURVEY.

I could proceed to deal in detail with occurrences which I have observed during many years in Cape Colony, Basutoland, the Free State, Transvaal, Natal, and Zululand, most of my journeys having been accomplished on horseback or on foot. I need only say, however, that South Africa is a field well worthy of thorough exploration, and, when results justify it, there will be an immense field for exploitation. Meanwhile the Government could render important assistance by having the country surveyed in small sections, an experienced oil-man being appointed to each. The services of an engineer such as Mr. Coryell in charge of the Oil Survey I would strongly recommend. Mr. Cunningham Craig attaches too much importance to the influence of igneous dykes or intrusions. Mr. Coryell takes a contrary view, and merely regards them as great dividing lines or "ribs," in the formation of the country, exposed by denudation, which will only the better enable anticlinals to be clearly defined; whereas in other countries the exact position of the anticlinal is largely a matter of guesswork, or, on the other hand, the systematic and sometimes costly following up of indications. It only needs a day or two on the South African veld to determine that these great enclosing dykes have a general strike of north-east to south-west and of north-west to south-east, the interesting parallels, which are generally two or three miles apart, forming squares or rhomboids easily discernible.

REPRESENTATIVE OF POWERFUL OIL GROUP COMING OUT.

In matters of this kind, where men have spent a lifetime in gathering experience, flippant and ignorant newspaper criticism ought to be discouraged. A great factor in the welfare of South Africa, and a means of supplying one of the most essential requirements of the Empire, is under discussion, and a proper understanding of the subject is vitally necessary. Success will mean not the good of one man, or one syndicate, or one company, but the good of the country, the welfare of all, and the strengthening of the Empire. I have written authority for stating that, quite apart from everything else, it is common knowledge in London that one of the most powerful groups of oil people and financiers, with millions behind them, and on more than speaking terms with the powers that be, are satisfied with the result of their investigation into the independent reports and representations that have been submitted to them from South Africa, and are sending out immediately, at their own cost, a representative to select working areas and sites, and prove the oil capabilities of the country by the only means that can be recognised—drilling in the right spots, with the right machinery, and by the right men.—I am, etc.,

HENRY PATTERSON.

P.O. Box 221,
Johannesburg, Transvaal,
September 29, 1913.

Rhodesian Section.

LATEST MINING NEWS.

Antelope Plant Running—Somabula Diamonds—Pickstone Mines' Progress—Amalgamated Props. Again—Geological Museum Report.

Preliminary tests are now being made with the reduction plant on the Antelope mine, a trial run which has already taken place being reported as highly satisfactory and successful in every way. It is understood that regular crushings will begin on this mine, one of those under the management control of the Goldfields Rhodesian Company, at the beginning of next month. In that case, the first official output from the property will be included in the November returns. The plant has a capacity of about 3,000 tons monthly.

* * * *

The directors' report on the Pickstone Gold Mines for the year ended the 31st July last shows that the issued capital of the company stands at £36,007. Three blocks of claims have been acquired during the year, making the total number of claims held by the company 102. Two dividends, aggregating 12½ per cent. were paid during the year, absorbing £4,500, while the large additions to the plant, etc., made during the period were paid for out of current revenue. The directors agreed to forego one-third of their fees due in the last half of the year and to fix these for the future at £560 per annum. There were milled during the year 10,409 tons, and cyanided 6,202 tons, the value of the gold and silver recovered being £34,677. The cost of the work done in connection with the new plant, referred to above, figures in the accounts at £4,152.

* * * *

During August 234 ft. of development have been accomplished at the Sabiwa mine. 4th level, drive south, extended 47 ft. during the past month, making a total of 97 ft. Crosscut No. 1, 25 ft. from shaft, assays an average of 7½ dwts. per ton over 12 ft. Crosscut No. 2, reef has not been intersected as yet. Crosscut No. 3, first section of 12 ft. assays 10 dwts. Crosscut still in reef. 4th level, drive north, extended 11 ft. during the past month, making a total of 53 ft. Crosscut No. 1, 20 ft. from shaft, assays an average of 7½ dwts. per ton over 8 ft. 3rd level, drive south, extended 10 ft. during the past month, making a total of 409 ft. Drive in poor reef matter at present. 2nd level, drive south, crosscut near Kopje shaft, first section of 9 ft. assays 11½ dwts. Middle shaft: Have commenced driving on the 2nd level, drive south, driven 15 ft., assaying 12½ dwts. per ton over 32 ins. Mine looks well.

* * * *

Diamonds to the value of £480 were exported during the month of August. The value for the past eight months amounted to £1,759. Nearly all the diamonds were found on the Somabula Diggings, and, taking the average number of men working to be fifteen, each digger appears to be making about £15 per month. The number of men working has now increased to nearly forty, and from all accounts we (the *Gwelo Times*) hear that every one is making a living, and the new arrivals speak very highly of the prospects, as they consider the expense of working not so great as on the Vaal River or Bloemhof, where wages are much higher. Some of the diggers are, we understand, to go further afield, and again try the neglected Ngama Diggings, where quite a number of diamonds were found in the early rush. All these diamonds were unfortunately small, and this was the reason that the lower stretches of the Ngama River were soon neglected. There is no doubt but that considerable attention is now being directed to the diamond fields, and it only requires one or two men to discover large stones, when quite a rush may be anticipated.

* * * *

The *Mining World* has the following:—"We now have particulars of Amalgamated Properties of Rhodesia reconstruction. The full number of 3,500,000 shares in the new company were applied for, and the underwriters were not called upon to take a single share. The success of the reconstruction was as complete as we hope will be the future career of the company. In this connection we repeat the assurance previously given in these columns, that in Mr. G. R. Bonnard, the company has a chairman whom the shareholders may thoroughly trust and who may be relied upon to do all that is possible in their interests, without fear of any adverse influences that may oppose him in the task.

Messrs. Pauling & Co., Ltd., have nearly completed their contract for the taking up the old 2-ft. gauge light line from Mount Hampden Junction to Eldorado, and the substituting of the 3 ft. 6 in. gauge in use throughout South Africa.

The *Mining Magazine* for October has an article by Mr. F. P. Mennell on "Features of Some Rhodesian Orebodies." (Characteristic types. Banded Ironstone. The Antelope, Connemara, Golden Kopje, and Wanderer Mines. Banket Deposits. Eldorado and Shamva Mines.)

The following mines in the Shagari district are under offer to the B.S.A. Co.'s Gold Mining Development Co., Ltd.: Jane Anna, Arlanza, Oleander, and Shagari Mines, Ltd. Mr. Pickering, the company's engineer, and Mr. Yuill, his assistant, visited the mines last week, but it is, of course, not known what decision has been arrived at.

The Try Me mine, Gatooma district, has surmounted its water difficulty. Another big pool in the Umsweswe River has been discovered, and as soon as the pipes from the Try Me have been connected with it, crushing will be resumed. The Trinidad mine, four miles away, has struck water at a little over 100 feet, and the Rocky Blue, situated not far from the Agnes mine, has now also secured water.

A *Herald* correspondent writes:—In referring to the Lomagundi district the other day I forgot to mention the Anvil mine that I visited. It is about a mile from the Tank (73½ mile peg), between Banket and Eldorado stations. The property once belonged to the Lomah Stossel Syndicate, and had been shut down, prior to about two months ago, for over a year. It is now owned by the Mapiki Syndicate and Mr. R. H. Pidcock, who is well-known in Rhodesia, is the manager for developing the mine. When he took command about two months ago, it was a scene of desolation, but, single handed—he is the only white man employed he has evolved order out of chaos and has shown what a man of brains and energy can do. He has overhauled all the machinery and plant, built a new boiler shed and workshop, new huts, new compound, re-timbered the shafts, and with the pumps raising over 5,000 gallons of water an hour, he is able to keep the mine free and thus enable the development to proceed with vigour. The Mapiki Syndicate is fortunate in their choice of a manager. The indications, further, are in favour of the mine turning out a good paying proposition. The water will be a very valuable asset when the battery starts. It is not all running to waste, as the enterprising Mr. Pidcock has a vegetable garden started and amply irrigated. The Anvil mine is really on Dunphaile farm, belonging to Messrs. Larter Brothers.

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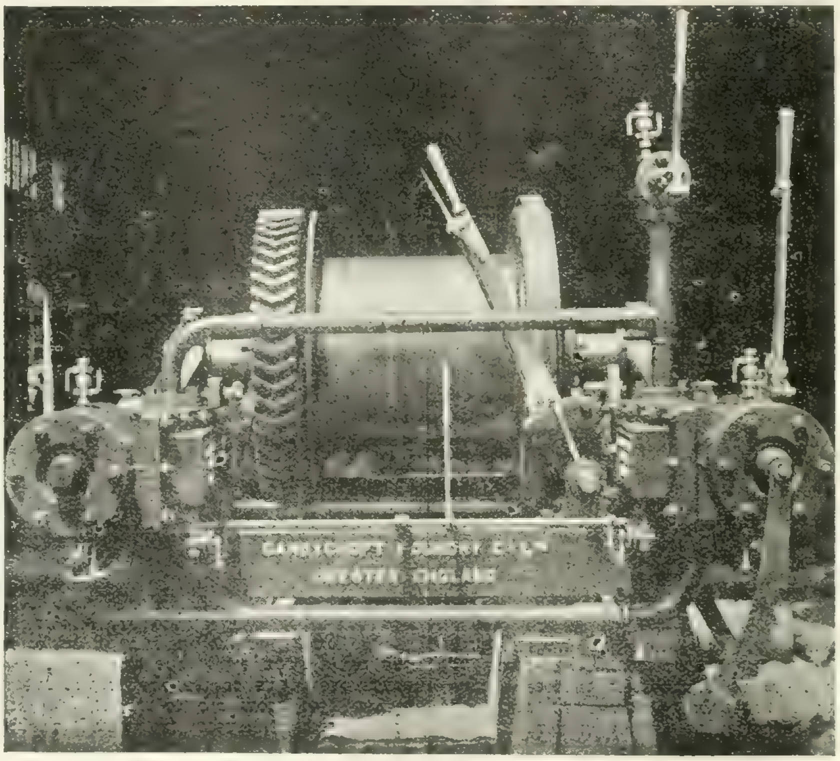

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Engineering Notes and News.

Standard Fishbolts and Nuts.

A specification issued recently by the British Engineering Standards Committee deals with steel fishbolts and nuts, and prescribes the quality of the steel and tests for both the steel and finished fishbolts. The question of design is left open, although a pattern is suggested for square nuts for use with angle fishplates. The clauses of the specification also deal with the process of manufacture of the steel, with tensile, bend and unscrewing tests, and the number thereof, with inspection, additional tests before rejection, margin of weight, gauging and cases where the steel should fail to comply with the tests and requirements. Appendices refer to standard Whitworth screw threads, and to forms of standard tensile test pieces.

Fraser & Chalmers Machinery.

The new catalogue dealing with machinery for the economical handling of material issued by Fraser & Chalmers, Ltd., 3 London Wall Buildings, is prepared in the best style of the printing art. In opening what they have to say, the company draw attention to the distinction between the article which is made valuable by the labour expended upon it and the moving of material from one place to another, all expenditure on which is wasted. They naturally conclude that it is desirable to handle material as little as possible, and where this cannot be avoided it should be dealt with in the most economical way. The experience of the company in the despatch of machinery to remote mining camps must have brought this lesson very near home to them, and hence they have sought to specialise in machinery for the economical handling of material, and may claim for their efforts a conspicuous measure of success. They first draw attention to their belt conveyor—the system they mainly supplied, and that, when conditions are favourable, is the most economical. This form may be relied upon to provide the most economical method of handling, but the best rubber must be employed or results will not be satisfactory. The company supply only one quality, and that, the best. A description is given of the belt conveyor, and amongst the advantages claimed for it are that the system is easy of installation, with no possible chance of breakdown, that it can, without much trouble, be kept clean, that it requires less driving power than any other arrangement, that it is without limit in capacity, and that the only part requiring renewal, and this at long intervals, is the belt. The company claim to have produced a belt which will overcome such causes of failure as peeling and blistering, wearing through of the cover; separation of the various plies of duck, and destruction of edges. The importance is emphasised of having the belt carried on properly designed idlers. The company also supply ball-bearing idlers with steel rollers, each of which is fitted with two ball races. Then there are the trippers, driven by the belt conveyor itself—these trippers being of the automatic type. The company supply two kinds of takes-up—the protected screw and weighted. In all ordinary conveyors the protected screw pattern is supplied, of which a full description is given in the catalogue. The experience of the company has been unique in the supply of belt conveyor shipping plants, and in this work they have secured a mass of data which is unreservedly placed at the disposal of customers. The cost of loading by this means is greatly reduced. The company also supplies ore conveyors—26 of them being at work on the Belliere Mines in France. The company has also installed picking belts, stackers for tailings from gold mines, etc., and bucket and tray conveyors, whilst it has been entrusted with the design and manufacture of several locomotive coaling stations in various parts of the world. The merits of Barling's equalising gear are dwelt upon. This does not add to installation cost, but is an appliance which, for the same output, materially diminishes the initial cost. Next are introduced the floating elevators and coal bunkering machines, which have exercised the ingenuity of the

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South African School of Mines and Technology.

DEPARTMENT OF ELECTRO-TECHNICS.

The Council of the School invites applications for the position of Professor of Electro-technics. Duties to begin 1st March, 1914. Salary, £1,000 per annum. The work includes Lectures and Laboratory practice, with excursions for Diploma Students and Classes for Evening Students.

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company for a long time. The result is several appliances in this department, which reduce labour, facilitate despatch, diminish the liability of coal to breakage, permit of accurate weighing and lower the cost of handling. Some machinery of this description, recently installed for the British Government, unloaded colliers at a total cost of ¾d. per ton, including labour and power. The company is now making electrically driven grab transporters, which are claimed to be superior to the rope-hauled system.

To Lubricate the World.

The world is thinking big to-day. One inventor, Dr. Edward G. Acheson, has made up his mind to lubricate the world—in other words, to produce a lubricant that will save half of the world's horse power. Authentics say that one thousand million gallons of lubricating oil are used every year. Lubrication costs the British Empire alone £18,750,000 per annum. Dr. Acheson proposes to save one-third of this, and furthermore to reduce the coal bill by one-half by reducing friction to a minimum. Dr. Acheson, who is the inventor of carborundum—the world's most efficient grinding material—has in his electric furnaces, at a temperature of 5,000 degrees F., been able to procure a perfectly pure graphite analysing as much as 99·8 per cent. carbon. He has also been able to effect the astounding result of obtaining the deflocculation of graphite into such fine particles that it will remain diffused in a liquid like oil or water, and flow wherever the liquid will go. This subdivided graphite, when mixed with oil, forms a preparation which is capable of entering not only the pores, but the molecular structure of metals, and produces a wonderful lubricating effect, saves friction, saves coal, saves oil, saves power, and saves noise too.

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Erection of telephone exchange, Boksburg (Oct. 29).
For supply of fencing material and gates for grain and coal bags to South African Railways and Harbours (Nov. 11).
For South African Railway and Harbours, paraffin oil (Oct. 28); also for antifriction grease and carbide of calcium (Nov. 11).
For stores, in "Gazette," 23rd September (Nov. 11); Portland cement (Nov. 18); lubricating oils and galvanised steel sheets, and cotton waste (Nov. 25).

The best "Reef Traveller" is the *South African Mining Journal.*

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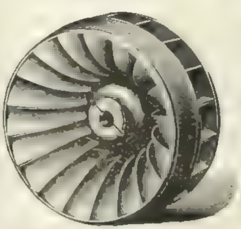

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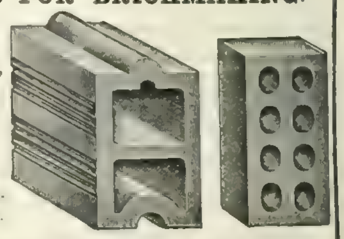

AGENTS WANTED. CATALOGUES ON DEMAND.

Finance, Commerce, and Industries.

Miners and the Agricultural Industry.

In a lecture delivered in Johannesburg this week Mr. R. A. Davis, Government Horticulturist, dealing with citrus growing in this country, stated that if we continued to progress as we were doing it would not be many years before we should build up one of the largest industries South Africa had known. He pointed out that the first consignment of citrus was exported in 1907, when about 3,000 boxes were sent to the European markets. In 1911 about 15,000 cases were sent and the last season we had jumped up to 40,000 boxes, composed mostly of oranges. He often wondered why either some individual with capital or one of the land companies had not selected a large tract of suitable land and cut it up into small lots of 10 to 50 acres. If a citrus orchard is conducted on proper business lines there is quite a fortune in it. For instance, the lecturer stated that one farmer in the district of Pretoria had made a profit of £240 per acre per annum, another farmer in the Cape made £125 per acre per annum, whilst a well-known firm owning a farm near to the coast made on an average £3 per tree per annum. As pointed out by one of the speakers, no less than 100 trees are planted to the acre; it may therefore be seen that there is an enormous margin for profit and that it would only be a matter of a few years when the citrus industry of South Africa would be rivalling the gold industry. Some of the old orange trees, probably forty years old, were yielding as many as 10,000 to 12,000 oranges per tree. There was no need for the citrus farmer to worry about the South African market as our fruit ripened during the European summer months when most other countries' fruit season has ceased. As much as 22s. 6d. per box of about 150 oranges was realised this season in Europe, and we had only touched the fringe of the market. A great many of our mine managers and the miners themselves are gradually beginning to realise that the wisest way to invest their savings is by acquiring suitable ground for farming. This is a safe investment, provided a little care and time is taken in selecting a good farm, with water and depth of soil. If citrus is to be the principal industry of the farm, there are always a number of white men ready to prepare the ground and plant either the seedlings or budded trees. With the large number of agricultural students in the various colleges of the Provinces there should be no difficulty in securing the services of these trained youths to bring the farm up to the producing stage. In Australia State-aid is given to the miner, who is an asset to the country, to enable him to acquire a small farm and eventually retire on to the land. As an example, let us assume that a suitable estate close to a railway, possessing the necessary water supply, depth of soil, etc., is cut up into 10-acre plots. Each plot could plant 100 trees to the acre on, say, 9 acres and retain one acre for residence, vegetable garden, stable etc. According to Mr. R. A. Davis, the Chief of the Government Horticultural Department, it is not an uncommon thing to get £2 per tree as a return after, say, five or six years; this would give an annual income of £1,800 on the 9 acres—but if one even knocks off the £800 for working expenses and other incidentals, the return is good enough. We must, however, in justice to Mr. Davis, state that he made it very clear that the profit derivable from orange growing depended more on the man than on the tree, and provided always that a suitable farm was selected with water.

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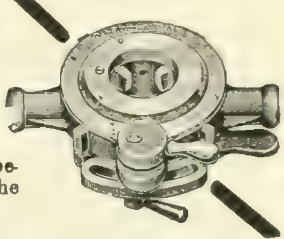

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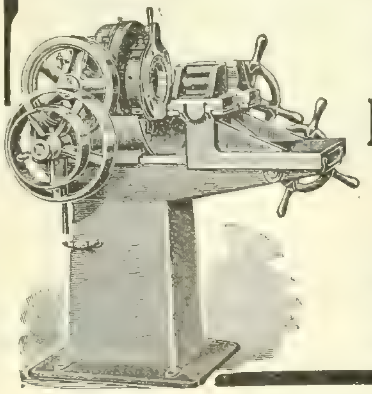

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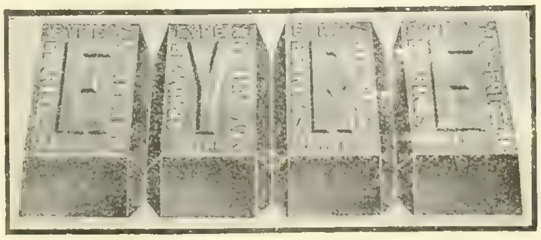

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THE WEEK IN THE SHAREMARKET.

Very Little Doing—Rand Prices Remain Steady—The Diamond Slump.

THE week has been singularly uneventful, and low water mark in lack of orders seems to have been reached. The total commission earned on the market in one day was under 35s., and the remainder of the week was little better. Rand stocks, however, remain steady, and dividend payers are always absorbed without difficulty. Diamonds have been the weak feature, the reasons being, apparently, the state of the market for the stones and the fact that the recent rains disorganised work for a few days at some of the mines. All should go better, however, and any return of activity to the market should also be reflected in the prices of tin shares.

* * * *

According to London advices there is a more hopeful tone in the Rhodesian market, which may, it is hoped, be maintained. It is expected that the land development policy of the Chartered Company will shortly be announced, and it is anticipated that this will give a general fillip to the country. Rhodesia is admirably adapted to cattle ranching, for which purpose there are millions of acres of land available. This land stands generally in the books of the companies owning it at merely nominal prices, so that the creation of a demand would have a very beneficial effect on the values of holdings. As regards the gold mining companies, the interesting event of the week has been the publication of details of the Giant-Cam and Motor deal. The Giant Company provides £20,000 for development work and acquires an option for two years on a number of claims in the neighbourhood of the Cam and Motor mine. Should this development prove satisfactory, the Giant Company will form a new concern to take over the claims on terms which should prove mutually beneficial. Further complications appear to have arisen in connection with the directorate of the Globe and Phoenix, and another resignation is reported. Apparently the squabble over the affairs of this undertaking is to be never-ending.

* * * *

	Fri., 17th.	Sat., 18th.	Mon., 20th.	Tues., 21st.	Wed., 22nd.	Thurs., 23rd.
Adair Ushers	0 3*	--	0 3*	—	—	0 3*
African Farms	14 3*	14 6	14 6*	14 3*	14 3*	14 3*
Apex Mines	17 0*		—	17 0*	17 9*	--
Bantjes Cons.	14 0*	14 0	14 0*	13 0*	—	13 0*
Benoni Cons. .	2 0*	2 0*	2 3*	2 0*	2 0*	
Blaauwbosch	90 0	—		—		
Brakpan Mines	53 6	52 6*	53 0*	53 0*	52 6*	55 0‡
Breyten Collieries ...	25 0*	25 6*	25 0*	26 3*	26 3*	25 0*
British South Africa	19 0*	21 0‡	19 3*	19 6*	20 6*	21 0*
Bushveld Tins ..	0 7*	0 7*	-	1 0‡		0 8*
City and Suburbans...	47 0*	47 0*	47 0*	47 0	47 0	46 3*
City Deeps	55 6	55 0*	54 0*	54 0*	54 0*	54 6*
Cloverfield Mines	4 1*	--	4 0*	4 0	4 0*	4 0*
Clydesdale Collieries .	9 0*	8 6*	9 0*	—	—	—
Cons. Investment			19 0‡	-	19 0‡	17 6*
Cons. Langlaagte	25 6*	25 6*	25 6	25 0*	25 0*	25 0*
Cons. Main Reefs	16 3*	17 0‡	16 3	16 0*	16 0*	16 0*
Cons. Mines Selection	8 6*	—	—		—	—
Coronation Colls.		--		11 0*	11 0*	-
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5*	--
Crown Diamonds	8 9*		8 0*	6 6*	6 6	6 6
Doornhoek Tins... ...	—	5 6*		6 0‡	5 9‡	--
East Rand Centrals	8 0*	8 0*	8 0	8 0*	8 0*	
East Rand Coals	1 9*	1 10*	1 10*	1 10*	1 10*	1 9
East Rand Deeps	1 3*	1 2*	1 3*	1 3*	1 4*	1 4
East Rand Props.	43 6*	43 6	43 0*	43 0*	43 0*	43 0
East Rand Debs.					£86½	
Eastern Gold Mines	1 0		1 2*	1 2*		1 2*
Frank Smiths	8 10*	8 0	7 [illegible]	7 6	7 9	8 0
Geduld Props.	21 6*		21 6*	21 9*	21 3*	21 6*
Glencoe Colls.	7 0*	7 0*	7 0*	7 6	7 0*	7 [illegible]
Glynn's Lydenburgs..				17 0‡		16 0‡
Government Areas ...	19 6	19 3	19 0*	19 0*	19 3*	19 3
Jumpers		—			3 0*	
Jupiters	3 6*	4 0‡	3 6	3 3*	3 6	3 6*
Kaalfontein	0 4*	0 5*	0 5		0 4*	0 4*
Klerksdorp Props. ...	2 3*	2 3*	2 3*	2 3	2 3*	2 3
Knight Centrals	7 0	6 9	6 3*	6 5	6 3*	6 6
Knights Deeps	35 0‡		35 0‡	—	—	
Lace Props.	2 9*	2 9‡	2 9‡	- -	2 7	2 8
Luipaardsvleis .	7 6*	—	7 6*	—	7 6*	—
Lydenburg Farms	3 0*			3 0	2 11*	2 10*
Main Reef Wests ...	9 0‡	8 0*		7 0*	7 0*	8 0‡
Meyer and Charltons	100 0‡		100 0‡	-	100 0‡	—
Middlevleis	1 0	0 10*	0 10*	0 10*		0 10*
Modder B.	76 9*	76 6*	76 0	76 6*	78 0	77 0*
Modder Deeps	32 6	31 9	31 9	32 3	31 6*	31 9*
Natal Nav. Colls. ...		14 0*		—	—	
New Boksburgs	—	—		—	—	0 6*
New Elands	23 9*	24 0*	24 0*	24 0*	24 0*	25 6*
New Eras	5 6*	5 6*	5 6*	5 9*	5 6*	5 6*
New Geduld Deeps...	2 0*	—	2 0*	2 0*	2 0*	2 0*
New Heriots... ...	55 0*	55 0*	55 0*	55 0*	55 0*	59 0*
New Kleinfonteins	23 0‡	22 6*	22 9	22 0*	23 0‡	23 0‡
New Modders ...	223 9*	220 0*	-		—	—
New Rietfonteins	—	-		- -	4 3	4 6‡
New Unifieds ...	14 0‡		-		—	--
Orange Diamonds	1 10*	1 10*	1 11	1 9*	1 10	1 9*
Piggs Peaks	—	9 0*	—	9 0*	9 0*	9 0*
Pretoria Cement	45 0	--	45 0‡	44 0*	—	
Princess	4 6*	4 6*	4 6*	4 9*	4 6*	4 6*
Rand Collieries	—	—	-	2 6‡	-	-
Rand Klips	1 9	1 9*	1 9*	1 9*	1 9*	1 9*
Rand Nucleus	1 8*	—	1 8*	1 7*	2 0‡	—
Randfontein Deeps ...	2 3*	—	—	—	—	—
Randfonteins	26 6‡	—	25 6*	25 6*	- -	25 6*
Roberts Victors	-			32 0‡	25 0*	—
Robinson Deeps	27 0*	27 3*	27 0*	28 6*	29 0*	28 6*
Rooibergs	29 0*	28 6*	28 3*	29 3*	29 6*	29 0*
Rood. Durban Deeps	—	18 6*	18 6*	—	18 6*	18 9*
Ryan Nigels	—	- -	—	—	3 0*	—
Shebas .	5 0*	—	—	-	—	—
Simmer Deeps	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
S.A. Breweries .	—	40 0*	40 0*	41 0*	40 0*	—
S.A. Diamonds	—	-	-	--	—	30 0*
S.A. Gold Mines... ...	—	—	-	—	9 0*	—
S.A. Lands	3 3	3 0*	3 2*	3 2	3 2*	3 2*
Springs Mines	—	14 0	—	13 6*	13 6*	13 6*
Steyn Estates...	—	—		—	13 9‡	—
Sub Nigels .	8 9*	9 0	9 0*	9 3‡	8 0*	9 0‡
Swaziland Tins . .	44 0*	—		—	—	—
Transvaal & Delagoa			40 0*	—		—
Transvaal Coal Trust	31 9	32 0*	31 9*	31 9	31 3*	31 0*
Transvaal Lands	—	—	21 0*	-	—	—
Transvaal G.M. Est.	48 0*	48 0*	47 6*		47 6*	—
Van Ryn Deeps	35 3	34 9*	35 0	35 0	34 9*	35 0*
Village Deeps ...	37 3	37 0*	37 0*	36 9	35 6*	
Vogel Deeps ...	—		0 9*	--	—	1 0‡
Western Rands	2 9‡	3 0‡	3 0‡	3 0‡	—	—
Witbank Colls.	—	—	-	-	-	40 0*
Witwatersrands	69 0*	—	70 0*	—	70 0	69 6*
Wit. Deeps ...	57 9*	—	57 0*	57 3*	57 0*	57 6*
Wolhuters	13 6	13 9*	14 0*	13 6	13 9	13 6*
Zaaiplaats Tins	36 6	35 6*	36 0*	36 9	36 3*	36 3*

*Buyers. ‡Sellers.

*Buyers. ‡Sellers.

INVESTORS' DIARY.

The following company meetings have been announced:—

Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.
Nov. 25.—Transvaal and Delagoa Bay Investment Co.
Nov. 28.—Consolidated Main Reef Mines and Estate; Main Reef West.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Company	8.15
Standard ...	See bills.
Empire ...	8.15
Palladium ...	8.15
Carlton ...	7 to 11.15
Grand ...	7 to 11.15
Orpheum ...	7 to 11.15
Bijou ...	7 and 9

Automobile Notes.

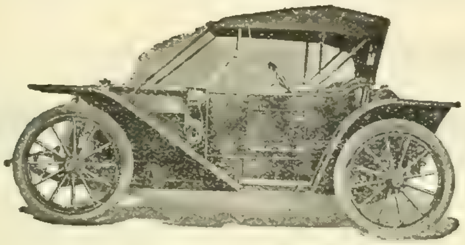
The economies of the motor tractor in farming operations are rapidly gaining appreciation throughout the world, and signs are not wanting that it will play a most important, if not revolutionary, part in agriculture in this country. It is in America, however, where commercial imagination has the widest horizon, that the possibilities of the internal combustion engine in this connection have received fullest recognition. Farmers everywhere in that country are now talking about power farming, and thousands have dispensed with their teams of animals, and installed the petrol motor in their stead.

Six years ago there were not more than 500 of these gas tractors in the United States, whereas last year 13,000 were sold. This year 20,000 will be turned out, of which some will find a market in South America and Europe, but the greater number will be bought by farmers in the United States. It has been calculated that the maintenance of the animals kept for agricultural purposes cost the country just 25 per cent. of the harvest gathered.

The "discovery" announced by cable a few weeks ago as having been made by the Petrol Substitute Joint Committee, appears from the London Motoring Press to refer to the production of synthetic petrol. Mr. Armitage, of the British Motor Spirit Company, has made enquiries, and states that the reports refer to Mr. Lamplough's process, in which the company is interested, and that the discovery in no way emanated from the committee.

* * * *

The growth of the motor industry and the accompanying increase in the number of manufacturers and traders has rendered the problem of the Motor Show year by year more complicated and more difficult of



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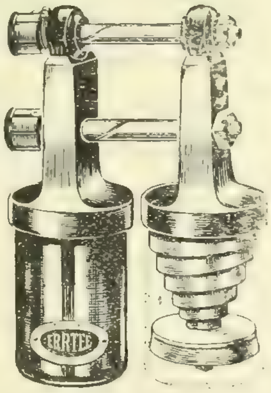

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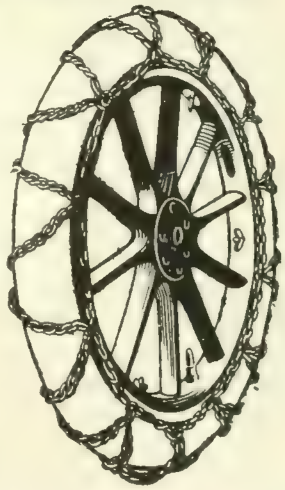

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solution. A considerable number of would-be exhibitors at the coming Olympia will be excluded for want of space, if other arrangements are not made. This exclusion is responsible for the growth of an increasingly large and powerful body outside the S.M.M.T., which may at any time resolve itself into a separate organisation. In order to obviate this contingency, the Management Committee have had the matter under discussion, and it seems likely that two shows will be held, the one following the other at an interval of about a week. The proposal is that one show would be for a class of vehicles, which reach £250 for chassis with tyres, and the other for vehicles whose minimum price limit exceeds that figure.

Among the papers read before the British Association last month at Birmingham was one by Mr. F. W. Lanchester on "The Internal Combustion Engine Applied to Railway Locomotion," in which the author expressed the opinion that the supersession of the steam engine was approaching. He discussed various systems by which the internal combustion engine was applied to railway traction, and by process of elimination deduced that for the conditions of British railways at least the most promising solution was found in a straightforward piece of engineering in which all the main elements, the petrol motor, the gear-box, the jointed transmission shaft, and the right angle drive, also the auxiliary electrical equipment, were taken from motor-car practice.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

New Capital.

The *Economist* by last week's mail contains the fresh capital applications for the first nine months of the year. The new issues for South African mining companies amounted for the nine months to £1,122,100, which is less than half the total for the corresponding period of 1912. On the other hand, the development outside the mining industry is indicated by the gratifying fact that for the nine months of 1913 the total issues for British South Africa aggregated £6,110,300, as compared with £3,812,600 in 1912 and £3,980,900 in 1911. In the same period of 1913, however, Canada absorbed no less than 27 millions sterling, and Australasia 17½ millions sterling. "Four Colonial Governments came on the market in the past quarter—three Australian and one the Dominion of Canada. The largest Australian issue was the Victorian loan in September, when £2,000,000 was put on the market in 4 per cents. at 98. New South Wales issued one and a-half million in 4 per cents. at 97½, and South Australia £1,000,000 in 4 per cents. at 97. As these Australian loans, even at the current low prices of issue, are not exactly run after, we may presume that Australia is now on a basis of not less than 4⅛ per cent. In the last week of the quarter the Canadian Government issued a £3,000,000 loan in 4 per cents. at 99, £1,700,000 being intended to provide for redemption. Colonial municipalities were rather less active in the past quarter—only four issues being made, and all of them Canadian."

* * * *

British Miners' National Conference.

The mail brings a report of the speech of Mr. Robert Smillie at the opening meeting of the annual conference of the Miners' Federation of Great Britain. It is generally regarded as disappointing. There were in the agenda many questions on which he might have spoken with advantage to the miners and the public; in the course of events in the coal mining industry during the past year there have been occurrences on which it might at least have been interesting to know the views of the leading spokesman of the numerically strongest Trade Union in Great Britain. The emphatic rejection by the workmen of the five-day policy was one of these; the coercion, openly avowed and unscrupulous, of non-unionists, was another; and the persistency with which miners continue to violate contracts and ignore agreements was a third. On all these points Mr. Smillie was silent. In an impartial and critical assembly the satisfaction expressed by him in the increase of membership during the year might have been modified considerably by disclosures of the methods by which that nominal increase has been, at least in part, obtained. It could have been shown that in the South Wales coalfield, which has contributed a very large, if not the largest, proportion of the increase, the force that has led to the growth in the membership of the Federation is not belief in the value of the union, but boycott and intimidation, which left very many workmen with no choice but membership or loss of employment.

* * * *

Brazilian Diamond Industry.

A recent French Consular report states that in the State of Bahia alone throughout the whole world is found the curious mineral called carbonado (amorphous carbon). Carbonado is identical, as to the chemical composition, to the diamond, but only presents an indistinct crystallisation owing to its peculiar state of condensation. It is now very nearly fifty years since there was first discovered, in the district of Lençoes (Lavras Diamantinas) in the Bahian jungle, the first irregular bits of carbon, ugly stones, black, isolated in the gravel, and whose abnormal weight alone at first attracted the attention of the diamond seekers. As a matter of fact, diamonds and carbon are found in the same alluvial beds. The price of carbon has varied much in the last forty years, and the extra quality is worth more to-day than the rough diamond. When this, the hardest known mineral, was first used for pointing drills and for making draw plates, its value mounted very quickly;

but now a disquieting fall in the sale is complained of. The piercing of tunnels and works in different countries—notably in North America and the Transvaal—had given a little animation to the local market, but new steels, extra hard, have been discovered, which are now used in works of perforation, and again, in changing more often the steel points than those of carbon, the engineers find further advantage. The European carbon markets are in London and Paris. The largest specimen found in the State of Bahia weighed about 3,200 carats, and for which was paid £6,400. The miner who found it received £6,000 for his share, and it was as large as the fist of an adult, and to-day would be worth at least £24,000. Before breaking up that enormous piece of carbon, which no museum would buy, two moulds were taken of it. One of them is kept in Paris, and the other at the Geographic & Historic Institute of Sao Salvador. The diamonds found in the State of Bahia, generally coloured yellow or green, are harder than those of the Cape, but their conformation is sometimes bad for trimming and often have flaws. It is impossible to know the exact amount of the annual exportations of diamonds and of carbon; it is put at, however, from £24,000 to £32,000 per month.

* * * *

Native Recruiting Corporation.

A report of the proceedings at the first ordinary general meeting of the Native Recruiting Corporation, Ltd., has reached us too late for insertion in this issue. In reviewing the position, the Chairman, Mr. C. W. Villiers, said, *inter alia*:—"The present position of the native labour supply is most unsatisfactory, but I think we may look forward to a considerable increase in the numbers coming forward at no distant date. Every care has been taken to reassure the natives in their homes as to the industrial position on the Witwatersrand, and provided there is no further disturbance I feel sure that the natives will shortly come forward to work on the mines in large numbers." A full report of the Chairman's speech will appear in our next issue.

* * * *

Congo Diamonds.

It seems that the Belgian Congo has distinct prospects of becoming a diamond producing country of importance. We have from time to time referred to the finding of precious stones in various portions of that great country, and it is now interesting to learn that the first shipment of any importance has just been made. This week the steamer Anversville arrived at Antwerp with 7,000 carats from the Belgian Colony. The diamonds in question were found in the upper Kasai basin and are said to be of much the same quality as the Damaraland stones.

* * * *

Stamp Tests.

Mr. Josiah Paull, manager of South Crofty Mines, Ltd., says the *Cornish Post*, has made a comparative test of the Nissen stamps at Carn Brea and the Californian stamps at South Crofty in order to guide the judgment of the Tresavean (Lanner) directors, who are about to purchase a battery to treat the ore, now that the mine has been drained and some good ground developed. The result of the test was that the Nissen stamp showed a saving of 1½d. per ton in power used; and six per cent. less slimes created during stamping. On the strength of this showing, Mr. Paull has recommended the purchase of Nissen stamps for Tresavean, and, we understand, the order is being given forthwith. Of the results from Leeuwpoort it is too early yet to learn anything.

* * * *

Modder B. New Plant.

We understand that an order has been placed for sixteen Nissen stamps for the Modder B. mine. It may be recalled that at the annual meeting of the company, held at Johannesburg at the beginning of June last, the Chairman said the cash position of the company had been kept strong with a view to a policy of gradual expansion of the crushing capacity, and he intimated that the then contemplated capital expenditure of about £60,000 included a sum "to cover the estimated cost of increasing in the near future the crushing capacity of the plant to 40,000 tons monthly." He added that the directors intended, with the shareholders' permission, to be free to utilise the funds, so far earmarked for renewals, in connection with the extension of plant in the future, if thought desirable. The present crushing plant consists of 80 stamps of the Californian type and five tube mills, and the largest output with this equipment was achieved in the month of May last, when the plant was pressed to its utmost capacity and crushed 36,100 tons. The addition of sixteen Nissen stamps to the mine's equipment should enable the management to raise the output to about 50,000 tons a month, providing, of course, that the present battery is kept pretty fully employed.

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South African and General Investment.

After meeting Debenture and other interest, the report of the South African and General Investment and Trust Company for the year ended 30th June last shows a profit of £21,900, an increase of £2,000, while, including £2,200 brought forward, there is a credit balance to be dealt with of £24,100; the dividend on the five per cent. Preference shares absorbs £5,400 and the distribution on the Ordinary capital is made up to 6 per cent. A sum of £3,000 has been written off against depreciation of investments, £600 has been set aside in respect of the opening of the new branch office in Rhodesia and £3,000 remains to be carried forward. It may be recalled that in December, 1911, 300,000 five per cent. £1 Preference shares were created, of which 115,308 have been issued to date. The company is now commencing to experience the benefit of this new capital. Moreover, in March, 1912, the business of the Natal Trust and Finance Company was acquired and involved a considerable amount of reorganisation work. This also has now been completed and should be productive of good results.

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The Coming Oil Boom.

To the growing army of prospectors and others interested in oil in South Africa the arrival of Mr. A. J. Greene, the representative of important London interests, on a brief visit has been the event of the week. Interviewed by a representative of this paper, Mr. Greene had some interesting things to say about the South African possibilities of oil, or rather oil-shale—for it is with the latter he is mainly concerned. "There were," said Mr. Greene, "two questions upon which we wanted to be satisfied, the first was 'quality' and the second 'quantity.' We are quite satisfied upon both points: the quality is beyond question or doubt and of extraordinary richness; with one-half the yield of oil per ton the shales would be considered to form a very remunerative proposition. As regards quantity we are more than satisfied upon that point, and so far as we are concerned it is not so much a question as to whether we can get enough to ensure a financially successful undertaking (because that we have already secured), but whether we can get all that there is and how much that 'all' amounts to. There is no reason now why there should be any secrecy about the matter, and in fact the more publicity that is given the more likely we are to discover the true extent of the strata. Where the exact northern or southern limits may be we have no idea, but we can say that, so far as we have been able to ascertain, we would make the southern point a few miles inland from Uitenhage. We know nothing of what exists north of Mombasa, but between the Uitenhage point in the south and Mombasa in the north this strata has been ascertained to exist in innumerable places although of varying, but generally good, quality. Almost every day I am receiving information from people living in, or conversant with, that vast intervening territory as to the occurrence of the oil at one point or another, sometimes 30 miles inland, sometimes nearer the coast line and sometimes a little further away, but always in a more or less direct line between these two points. One hardly dares to hope to find that it forms one continuous deposit, for if that were so it would represent wealth beyond the dreams of avarice—wealth compared with which the glories of the Rand would fade and cause every other property of its kind known throughout the oil world to sink into insignificance. Yet I suppose there are bigger fish in the sea than have ever been caught and this South Africa is indeed a land of surprises. Of course, as most people know, we are only on the verge of the 'oil age.' In Scotland the oil shales comprise a narrow strip of strata only six miles wide running between Dalmeny and Tarbrax. The total yield of this Scottish shale is one million gallons of crude oil per year, which is equivalent to 50,000 tons of oil fuel. If the British Navy adopts oil fuel, as it will have to do (inasmuch as other nations are doing so as rapidly as they can) there would be required, in times of peace alone, one million tons per annum of oil fuel of which amount the Scotch workings could supply but 5 per cent. In times of war the quantity required by the Navy would be enormously increased. The amount of coal now used in the British Navy and Mercantile Marine exceeds two hundred million tons per annum; the world's possible output of crude oil from existing workings, is 50,000,000 tons per annum, of which perhaps one-third could be used as oil fuel—say, 20,000,000 tons, or in other words but 10 per cent. of the total required to replace coal for the British Navy and Mercantile Marine. The British Navy cannot be adapted to oil fuel until there is a sure supply in view, as, if war broke out, supplies from existing sources would be immediately cut off. If we are going to continue to sing 'Britannia Rules the Waves,' then the oil resources of the Empire must be developed, and that with all possible speed." Proceeding, Mr. Greene said: "It would obviously take too long to make a thorough, minute and systematic search between Uitenhage and Mombasa for the purpose of tracing all the recurrences of the shales and therefore we have no hesitation in exposing our hand in this way, as we are most desirous of acquiring the whole of the territory wherein or whereon the shales may exist—that is, in a more or less straight line between these two points. I might add that to this end, we have already formed a company in London under the title of the Cape to Cairo Oil Development Company, Ltd., which we have every reason to hope will, in the not far distant future, do much to develop a great and permanent industry in South Africa and which will give further evidence of the vast wealth of this magnificent colony. Your readers will no doubt be interested to read the following remarks made in the House of Commons on July 31st last by the Rt. Hon. L. Harcourt, Secretary for the Colonies, in reference to oil and the Navy:—'The inadequate production of oil and the slow development of the industry had been great causes of anxiety to the Colonial Office and the Admiralty. He had kept steadily in view two objects, not always easily reconciled—the rapid and economic development of the oilfield for both the Colonies and the Navy. One was the exclusion, as far as possible, of those great combines, which he believed strangled production and inflated prices, and the second was the reservation to the Admiralty of full power to assume possession of the product even at the risk of getting a lessened price for the concession. He had in view also a security that the companies which secured concessions should be registered within Great Britain or her possessions, and that their business centres should be similarly situated, that a majority of their directors for all time should be British subjects, and that the companies should not at any time fall under foreign control. If at any time those conditions failed to apply, the Government might cancel the leases which had been given. The requirements of modern naval development were such that oil was required, and preferably—indeed, almost essentially—within the Empire. He had worked closely in consultation with the Admiralty, and had taken with them the provisions which they thought necessary to secure Imperial and naval control.'"

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Rooiberg Prospects.

Elsewhere in this issue is printed the very full and informing speech delivered by Col. Dalrymple at the Rooiberg meeting. For a company of its size and scope, the annual statements made from the chair at the Rooiberg meeting are quite the most exhaustive of their kind, and Col. Dalrymple is to be congratulated upon the minuteness of detail and the clearness with which he expounds the position for the benefit of shareholders. The annual reports and accounts have already been reviewed in these columns, and the extracts from the Chairman's speech set out in this issue elucidate the position to date.

TOPICS OF THE WEEK.

THE JOHANNESBURG CONSOLIDATED INVESTMENT MEETING.

In the Rand mining, finance and real estate world, the annual meeting of the Johannesburg Consolidated Investemnt Company, Ltd., is always an event of outstanding importance, and this year circumstances combined to make the occasion, if anything, more noteworthy than usual. Mr. John Munro, the Chairman, presided, and furnished shareholders, as is his custom, with a clear and masterly detailed review of the financial position of the company and the prospects of its mining subsidiaries. He showed that, owing to the financial unrest caused by the Balkan War, the money markets of the world had been greatly disorganised and opportunities for profitably employing resources were consequently considerably curtailed. In view of these circumstances the directors are certainly to be congratulated on being able to announce that the profit earned during the past financial year was sufficient to enable them to pay a dividend of 5 per cent.; to provide for all bad and doubtful debts and depreciation on shareholdings, and to increase the amount carried forward by approximately £4,000. The financial position of the company at the 30th of June, 1913, was briefly: Assets of a book value of £5,284,000, showing an increase of £165,000 over last year's figures, and a surplus over the liabilities, exclusive of the dividend of 5 per cent. paid on the 25th of September, of £4,566,000. The liquid assets amounted to £1,010,000, an increase of £38,000, as compared with 1912, and exceeding the liabilities by £292,000. As Mr. Munro very modestly put it, these figures clearly prove the solidity of the company and the strength of its financial position. "We must all regret that the dividend paid was not larger," he said, "but unfortunately the period covered by the accounts has been one more for the protection of your assets than for making large profits." The position of the gold mining companies with which the prosperity of the "Johnnies" company is so closely bound up, was described in detail by the Chairman. The quarterly reports issued last week by these companies set out the position at these mines with such a wealth of detail that it is unnecessary to repeat all Mr. Munro's remarks under this head. Of the Consolidated Langlaagte, he remarked: "The company has been put on a sound financial basis, the shareholders are entitled to anticipate an early dividend, and I do not think they will be disappointed in this respect. The development results, though not quite up to the standard of the last two years, are nevertheless satisfactory." Of the Van Ryn Deep, Mr. Munro said: "The latest information to hand shows that the excellent values opened up during the past twelve months are being maintained. We have in the central and eastern sections of the mine an area of ground which, considering its extent and value, is second to but very few areas on these fields. Taken as a whole I consider that we have in the Van Ryn Deep a splendid proposition, and from every point of view the Johannesburg Consolidated Investment Company is to be heartily congratulated on the part it has played in bringing the mine to its present position." In regard to Knights he showed that, taking into account the grade of the ore exposed in the mine, together with the improved reduction plant, still further improvement in profits in the near future might reasonably be expected. State Mines is, of course, still in its infancy. "We have proved," said Mr. Munro, "that there are areas containing excellent values at each of the three shafts where any development work has been done, and we feel quite confident that when the mine is more extensively developed, we shall find that we have a very valuable property." The other mines of the group were almost all in an improved position at the end of the year. The Quest alone has proved disappointing, but of the New Unified Mr. Munro could "confidently say that prospects are at the present time brighter than for some time past." Taking the producing mines as a whole, omitting, of course, the period of unrest due to the unfortunate strike, the Chairman claimed that they had a fairly prosperous year, and had made steady progress. The Van Ryn Deep is a new concern, and has not yet got into its stride, but in the case of the other producing mines a comparison of working costs shows up favourably. For the year 1912 the average cost of these mines was 16s. 1d.; for the first six months of this year the figure was 16s. 4d.; while for the month of September the same mines worked at an average cost of 15s. 6d. per ton. Remembering that some of the plants on these properties have been running for a large number of years, and that several of the mines are on a small scale, these figures may certainly be considered satisfactory by shareholders. Moreover, Mr. Munro stated that the technical advisers are of opinion that there is still a good margin for further improvement, more particularly in underground costs, and it is hoped as time goes on to demonstrate it. Mr. Munro contented himself with exposing briefly some of the current fallacies regarding conditions on the mines, and he left to Mr. Imroth the handling of the bigger and more general questions in which the whole community is interested equally with the shareholders in the company. Mr. Imroth can always be counted upon to compress much food for thought into his annual review, and his speech this year shows him to have lost nothing in confidence, grip of essentials, and wideness of outlook. His remarks are printed in full elsewhere in this issue, and make very reassuring reading in these days of doubt and hesitation. Mr. Imroth takes up a brave attitude in regard to the recent white labour trouble. He confesses it has opened his eyes to the seriousness of the grievances on the mines. He therefore welcomes the concessions to the men and is determined to leave nothing undone to improve health and living conditions. To this end he expresses himself—though guardedly—in favour of the supercession of the contract system by the day's pay *cum* bonus system of payment, and this pronouncement will be doubtless be welcomed as a significant herald of reform in this direction. Once again Mr. Imroth entered a plea for a combination of diamond producers, and if recent cables concerning market conditions are to be credited the producers may soon learn by bitter experience the wisdom of Mr. Imroth's warning. The main fact of Mr. Imroth's speech, of course, is his unwavering belief in the future of the Rand and the good and sufficient reasons he adduces for the faith that is in him. Few can claim by reason of special and general experience to be able to interpret the signs better than Mr. Imroth, and his thoughtful analysis of the position and outlook will be welcomed by the whole business community as well as by the shareholders in the Johannesburg Consolidated Investment Company.

"FIRST AID" WORK AND THE RED CROSS SOCIETY.

Since last the work of the South African Red Cross Society was reviewed in these columns considerable and commendable progress has been made. The new organization has now been recognised by the Government, the Chamber of Mines, the Transvaal Miners' Association, and various other important public bodies. Its activities seem daily increasing, and the ready co-operation forthcoming from doctors and men provides the best answer to those who doubted the desirability of its formation. Its success in initiating and carrying to fruition the various first aid and ambulance contests has alone already justified its existence. But undoubtedly the greatest achievement of the Society and the most tangible proof yet afforded of its enterprise and vitality is the proposed publication under its auspices of a work on first aid in metalliferous mining, now in preparation by L. G. Irvine, M.A., M.D., B.Sc., D.Pub.H. (Edin.). The work represents the first serious attempt to apply the elementary principles of first aid, ambulance and rescue work to the peculiar conditions of Transvaal metalliferous mining. Unlike other mining fields, the Transvaal gives employment to a large number of white and coloured mine employees, and the occupation of mining is one in which serious accidents are liable to occur. Therefore the Mining Regulations of 1911 require that a certificate of knowledge of first aid, "with special reference to mining accidents," must be held by certain mine officials. Since the First Aid Manuals in general use do not contain specific information regarding accidents occurring in mines, the South African Red Cross Society has decided to issue this supplementary manual on "First Aid in Mining," in the hope that it will be of use, not only to those who are required to possess a knowledge of the subject, but to all those engaged in mining work. The author, Dr. Irvine, however, says it must be understood that his notes are not designed to serve as a complete text book. They are to be regarded as supplementary to the information contained in the ordinary First Aid Manuals, and consist mainly of additional suggestions and information likely to prove of service in the practical treatment of accidental injuries occurring in mines. Suggestions regarding the equipment of emergency stations and of the first aid box have been introduced, in the hope that they will help towards the standardisation of the material available for first aid treatment on all mines, so that instruction and training may be based throughout on uniform methods. For the same reason a resumé of the treatment of wounds, hæmorrhage, and fractures, incorporating the methods of using the suggested first aid appliances, and a section on methods of transport of injured persons, have also been introduced. As a consequence, the volume contains, in a form suitable for ready reference, all the essential practical points in the methods of first aid treatment which are likely to be of service to those who have to deal at first hand with accidents occurring in metalliferous mines. The section dealing with accidents resulting from the fumes of explosives and other forms of "gassing" has been expanded beyond the ordinary limits of first aid teaching. This has highly been thought desirable, because no succinct and at the same time reasonably comprehensive account of this subject is so far as we know available. For instance, it is pointed out that the majority of "gassing" accidents are due *either* (and most frequently) to pure carelessness or ignorance on the part of miners in neglecting to use the means of local ventilation at hand to blow out close places before settling their gangs to work, and in some cases in returning too soon to their working places after blasting before the fumes have been dispersed, *or* to the lack of provision of systematic and adequate means of local ventilation by those responsible. There is no doubt that gases tend to be imprisoned in the broken rock after blasting, and may readily become a danger in close places when they are liberated as shovelling proceeds. Hence it is recommended that the air should be kept turned well on for some time and the broken rock should be thoroughly wetted down. The present volume deals with the requirements of metalliferous mines only. The South African Red Cross Society hopes later on to issue, either separately or in conjunction with this publication, additional material dealing with first aid and rescue work in coal mines. That the author has successfully carried out his self-imposed task is apparent from the most cursory glance at the work. It is detailed, comprehensive, clear. Much that is peculiar to Rand mining is given with a wealth of detail, first-hand knowledge, and explanation that is nowhere else to be found in such handy form. In connection with the investigations into phthisis which he carried out with Dr. Macaulay, the author has earned a reputation for thoroughness and intimate acquaintance with Rand conditions which are amply attested by the work before us. The names of Messrs. Denis Santry and Cain are sufficient guarantee that the illustrations—an all-important feature in a manual of this sort—will be worthy of the work; and the fact that the publication emanates from the same office as the excellent publications of the Chemical, Metallurgical and Mining Society, ensures its accuracy and careful sub-editing. The Red Cross Society is to be congratulated on the enterprise, and the author on the zeal and thoroughness shown in the preparation of this valuable work.

WORKING COSTS AND RUNNING TIME IN SEPTEMBER.

The Pinch of Labour—How Different Mines Had Their Running Times Affected.

WORKING costs of Transvaal gold mines in the month of September amounted in the aggregate to £1,867,878, or 18s. per ton, which compares with £1,957,615, or 17s. 9d. per ton in August, and £1,857,779, or 19s. 5d. per ton in July—the strike month. Compared with a year ago costs show a decrease of 9d. per ton milled. In view of the acute shortage of labour that has recently embarrassed the industry so greatly, the September working expenditure and working profit figures must be adjudged thoroughly satisfactory.

NEW MODDER AND JUPITER.

Some mines have, of course, felt the pinch much worse than others. Few properties along the Reef have experienced such an acute shortage as the New Modderfontein, and during September the 180-stamp mill was run for less than 18 days. Nevertheless a profit of over forty thousand pounds was won and costs were at the creditably low figure of 19s. 2d. per ton, which includes 1s. 6d. in respect of development or development redemption charges. The Jupiter, which was on the point of closing down, ran its 120-stamp equipment for 16½ days only with costs at the low figure of 14s. 2d. per ton. The returns of this mine cannot, however, be considered normal, as ore previously broken was put through the mill and the mining and development charges incurred during the month were very small.

CITY DEEP, BANTJES, AND CONSOLIDATED LANGLAAGTE.

With the exception of the West Rand Central, the City Deep's costs at 25s. 8d. figure as the highest on the Rand. The expenses per ton, exclusive of development, were 22s. 5d., and on account of development or development redemption 3s. 3d. Here 150 out of the 194 stamps erected were operated, but only for eighteen and a-third days. It is clear that this property, too, has recently felt the shortage of unskilled labour severely. At this property the presence of a false and somewhat insecure " hanging " in some portions of the mine renders it inadvisable to employ drills in certain stopes, and when there is a shortage of hammer boys the City Deep naturally feels the effect most severely. The Bantjes Consolidated also records poor running time—19·49 days, and the costs were at the rate of 23s. 7d. per ton. The Consolidated Langlaagte, the new mill of which company comes under the Sunday Observances restriction, ran for less than 20 days. Expenses were, however, creditably low, 14s. 2d. per ton plus 2s. 9d. for development or development redemption, making a total charge of 16s. 11d.

LOW EXPENSES.

The Knights Deep recorded good running time—28·62 days, and the costs at 11s. 1d. per ton (including 3d. in respect of development charges) were the lowest on the Rand. The May Consolidated, where development of the mine is completed, operated its 100-stamp mill for 28.7 days, and its costs at 11s. 7d. per ton are next to those of the Knights Deep in point of lowness. The Simmer and Jack 320-stamp battery ran for practically full time, 29·57 days, and its expenditure was 12s. 9d. per ton. It will be appreciated from the foregoing that different mines felt the stress of native labour shortage in different degrees during September. At some properties the short running milling time, which is a direct consequence of labour shortage, resulted in abnormally high rates of expenditure. On the other hand, most of the mines that had a more or less normal period of milling record satisfactorily low charges. It is evident that with a labour supply more closely approaching that of the earlier months of the year material reduction in working costs would be effected.

KROMDRAAI MINE TO BE REOPENED.

The Property to Have a Thorough Trial—Proposal to Erect New Plant.

IT is particularly encouraging to find that although the stress and exigencies of the present year have necessitated the closing down of one or two important mines along the Main Reef series, private enterprise is not blind to the possibilities of some of the smaller concerns of the Witwatersrand. A considerable amount of activity still prevails on the Black Reef, and much attention continues to be paid to tailings, dumps, etc., along that line. Efforts are now being made to re-open a proposition on quite another portion of the Rand, and it is, we learn, assured that these efforts will be brought to a satisfactory consummation and that sufficient capital will be provided to work the concern on a sound business basis.

A CHEQUERED CAREER.

The property in question is the Kromdraai mine, situated to the north of Krugersdorp. The Kromdraai mine, which was at one time owned by the Henderson's Consolidated Company, has so far had a chequered career. At various times numerous syndicates, prospectors, and tributors have essayed to work this proposition at a profit, but as yet it does not appear that any real measure of success has attended these efforts. There are, however, reasons for believing that the values and nature of the ore in the mine itself are not to be held wholly responsible for this. It is contended that for various reasons the property has never yet had a fair trial. Some years ago the mine was sampled by Mr. Fred. Hellmann, a former consulting engineer of the East Rand Proprietary Mines. Mr. Hellmann's assay plan shows considerable stretches of ore of good value, and having regard to the amount of development work done in the past there at least appear to be reasons for giving the mine a fair and businesslike trial.

THE METALLURGICAL SCHEME.

It may be recalled that the old mill of the property was blown up during the war. Subsequently new plant was installed. The new company will have a working capital of £6,000, and it is proposed to replace the existing stamps by an up-to-date reduction plant. The ore is slightly refractory (it contains a small percentage of arsenical pyrites), but at the same time there is no reason why a suitable plant should not secure a good percentage of extraction. At any rate, the new owners of the proposition intend to work the concern on sound technical lines, and they are confident of success.

Princess Estate and G.M. Co.

The operations on the Princess Estate resulted in a working profit for the quarter of £2,291 (8·7d. per ton). The working revenue amounted to £80,751 (25s. 7·6d. per ton), and the working costs to £78,459 (24s. 10·9d. per ton). Sundry revenue totalled £3,403. The expenditure on capital account was £6,349 18s. 9d. The amount of mine development redemption charged to working expenses was £7,875, and the amount expended on mine development £4,659 0s. 5d.—making the total amount redeemed in excess of actual expenditure £3,215 19s. 7d. The footage driven, risen and sunk on the reef and sampled was as follows:—South Reef, 720 feet, averaging 9.1 dwts. over 25 inches; Main Reef, 375 ft., averaging 8.4 dwts. over 36.7 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 9,215 tons; Main Reef, 5,877 tons; total, 15,092 tons. These figures are subject to re-calculation at the end of the year, when block values are made out.

THE MESSINA COPPER COMPANY.

A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

I.—THE HISTORY OF THE MESSINA COMPANY.

[Through the courtesy of the local management of the Messina Company, a representative of this paper has, within the past few days, inspected that company's property and has travelled over the new section of the Pietersburg-Messina railway between Louis Trichard and railhead. Few are probably aware of the magnitude of the work that has been carried out at the copper mine near the Limpopo River during the past few years, and few realise the full significance of the establishment of railway connection between the main South African railway system and this important base metal enterprise. In the following series of articles we shall attempt to give a full and detailed account of the proposition gained from personal observation and direct enquiry.]

IN the history of mining in South Africa no more remarkable chapter can be written than that which deals with the development of the Messina Copper Mine, situated in the extreme northern portion of the Transvaal, 130 miles north of the town of Pietersburg and 7 miles south of the Limpopo River which forms the boundary line of the Transvaal Province and Southern Rhodesia. A glance at the map will show that civilization has seemingly shunned this hitherto remote spot on the atlas of the sub-continent. It is as though the onward march of progress had passed by this highly mineralised region of the Northern Transvaal. The modern pioneers and the modern prospectors with their eyes bent on Rhodesia or the Murchison Range for many years left Messina to be an abode of wild nature. Civilization halted at Louis Trichardt on the southern flanks of the great Zoutpansberg Range and 60 miles from the mine and that civilization was of a particularly crude and unprogressive type. Away back in the dim ages Messina was assuredly a place of considerable industrial importance as the long and broad chains of ancient workings on which the present mine has been established testify. It may be that the production of copper by primitive methods was continued in a desultory manner by natives up almost until the present day, but the weight of evidence supports the view that the time when the Limpopo copper industry was in the heyday of its crude importance was many, many years ago. Then there was, it seems, a hiatus in the metal mining history of this part of Africa; a hiatus of centuries. The revival of activity at these copper fields has been a work that has called for astounding pertinacity and pluck and admirable organization and technical knowledge. It is not too much to say that Mr. John P. Grenfell, the original locator of the Messina mine, Mr. Arthur M. Grenfell, the present Chairman of the Messina (Transvaal) Development Company, Ltd., Mr. J. M. Calderwood, the company's consulting engineer, and Mr. J. A. Woodburn, the company's mine manager, have re-created the extreme northern portion of the Transvaal, and no one can realise what unbounded courage and tireless energy this renaissance has called for until he has travelled himself the long road over the Zoutpansberg Range and has come to understand some of the difficulties of opening up a mine to a depth of 900 feet, equipping that mine with concentrator and smelting plants, establishing a modern township replete with all the comforts of an old city, and settling thereon a happy and contented community of workers, numbering over 200 whites and 1,000 natives.

A Story of Difficulties Surmounted.

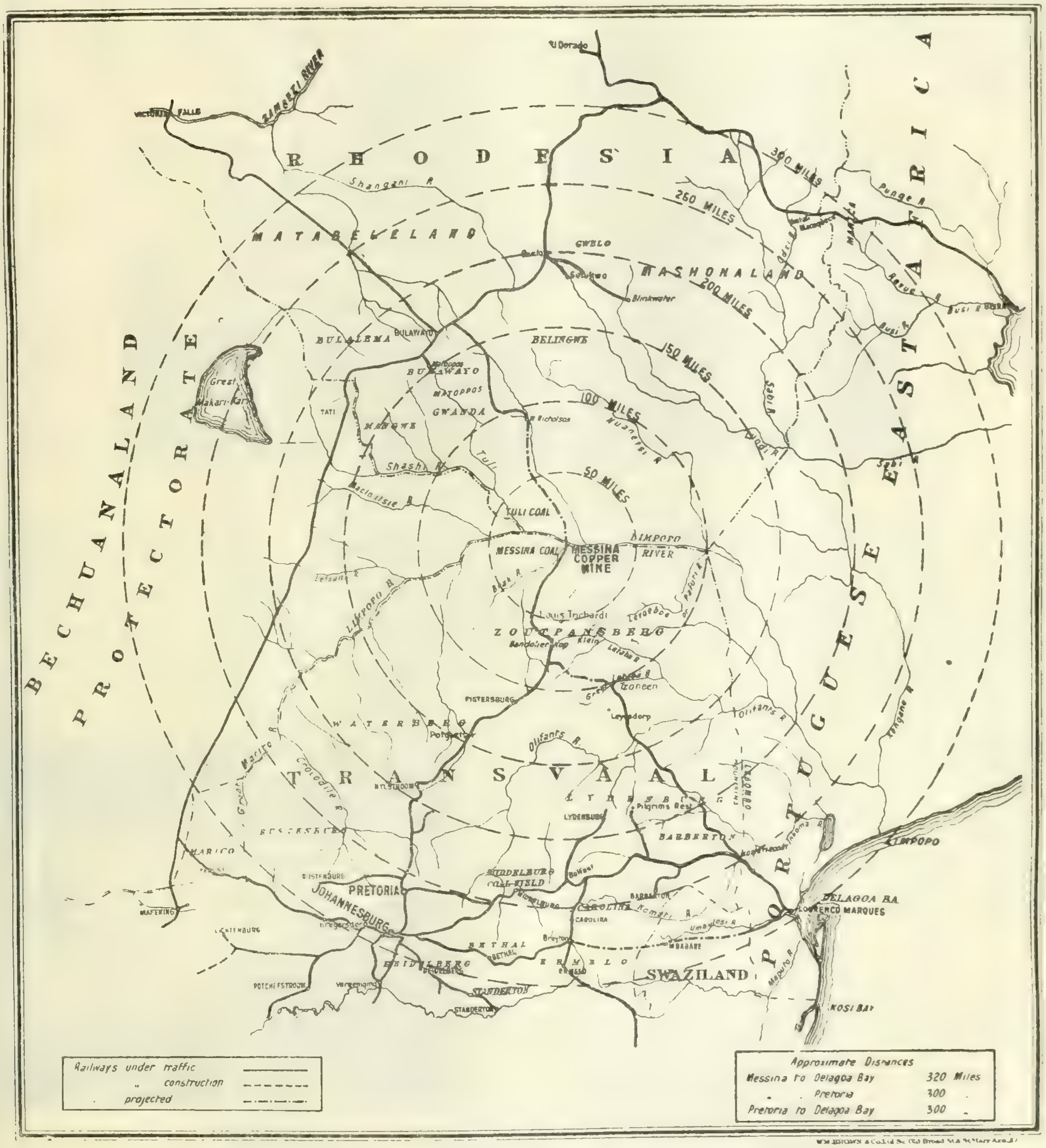
Railhead is now within 20 miles of the mine, and the Messina Company can afford to look back on those days of transport trials with a grim satisfaction. But the visitor to Messina to-day to appreciate the enormous labour entailed in the establishment of the mine and its equipment must abolish from his mental vision the easy road of the iron horse. He must picture the slow and laboured progress of wagons drawn by donkeys, passing through the great poort or crossing the range of the Zoutpansberg, and toiling along the weary road to Pietersburg. To realise the difficulties of the preliminary opening up of the copper lodes, the traveller must go further than that. He must see the donkey teams meandering along the lengthier route via the Brak River, a 160 mile journey to Pietersburg, then the most northerly point on the South African railway system. And if he can accurately visualise the old conditions and the new—the fourteen days' journey of the donkey wagons and the one day's journey of the locomotive—he will begin to grasp what Messina means to the Northern Transvaal—the tract of country that long stood a sanctuary for wild game and the brooding stillness of the Mopani bush.

The Old Workings.

The earliest history of the Limpopo copper belt, of which the Messina mine may roughly be taken as the centre, is wrapped in that mystery of the unknown which enshrouds so much of the past of Africa. Certain it is, however, that the members of some race exploited this belt for its mineral wealth in the days of long ago. On Berkenrode (the farm on which the present Messina mine is located), on Vogelsang which adjoins Berkenrode on the west, on Artonvilla immediately north-east of the mine, and on numerous other farms in the vicinity, there are extensive old workings. They extend over a large area of country, conforming with the strike of the various lodes exploited, and in places they are 80 feet deep. The widest portions of the lodes naturally engaged chief attention. The lateral extent of the old workings is very extensive, in some cases several thousand feet in length; the width varying from 10 feet up to 150 feet. These miners of a bygone day appear to have extracted the mineral contents by carrying down a series of opencast quarries and working the ore in a series of underground stopes. The larger pieces of waste rock were apparently rejected underground and thrown behind as the faces were advanced. Where the ore was comparatively soft and friable the rock was doubtless broken down direct by crude hammers, picks and gads. But where the ore was harder the ground was probably mined by lighting fires in front of the face and then wetting with water. Contraction and expansion played their respective parts and the lode matter would then be easily broken. The collars of some of the holes on Berkenrode and Artonvilla bear the appearance of having been smoked by strong fires—a fact which tends to support the theory enunciated above. The ore would be carried or hauled up the pits in baskets, and on arrival at surface it was cobbed or broken up with stone hammers. The richest pieces of malachite were by this crude method of concentration separated from the poorer portions and the gangue. The "concentrates" were then taken up to the top of a hill known as M'Shingelele which overlooks the Messina Camp and smelted, whilst the balance was either left on the surface or thrown back into the workings, which in some instances appear to have been systematically filled in. On the hill of M'Shingelele small pieces of rich copper ore, fragments of clay pipes, crucibles, and slags have been discovered, and some rather remarkable copper castings have been found in the vicinity of the camp.

And the Old Workers.

Who were these ancient miners, these men who followed the ore down to water level and who clearly had much primitive knowledge of the principles of metal mining and the timbering and support of their workings? It is very difficult to say. There are no traces of Phœnician activity at Messina. It would be dangerous in the face of the meagre data available to say definitely that those wonderful traders and explorers of Phœnicia, who were the chief rivals of the Greeks and Romans for the mastery of the ancient world, did not visit the copper belt of the Limpopo and probe its mineral wealth. But on the other hand it seems more reasonable to suppose that the early Portuguese navigators at least played an important part in the old time exploitation of these copper lodes. There are old Portuguese writings which seem to make it pretty clear that three hundred years or more ago the Portuguese knew of Messina and that they worked the copper lodes by slave labour. The descendants of those Helots doubtless treasured the knowledge derived from their conquerors and handed down the traditions and secrets of their work from generation to generation. Old natives living in the vicinity of Messina to-day declare that their fathers or grandfathers worked copper ores there. Probably some of the work was carried on not much more than half a century ago, and there are reasons for believing that there was a kind of tribute system in vogue whereby the proprietary chief collected a percentage of smelted copper from the natives in return for the privilege of working certain sections of ground. Other workings have probably not been touched for hundreds of years. But in any case it is certain that some at any rate of these old workings date back to remote ages. In one a fine Baobab tree (a notoriously aged vegetable growth) may be seen growing.



Map of the Transvaal, showing Position of Messina Mine.

The Modern Chapters.

The modern history of Messina dates from just after the conclusion of the Boer War. Hunters, prospectors, and traders had known of the extensive old workings situated to the south of the Limpopo River for many years, and their tales eventually reached the ears of Mr. John P. Grenfell, who was at that time in Southern Rhodesia. Mr. Grenfell proceeded to the Limpopo and as a result of his visit a small expedition was formed to penetrate the country from the south, and the original discovery and claim beacons were located at Grenfell's Camp, as it was then known. At first operations were carried out under the auspices of the Consolidated Gold Fields of South Africa and Mr. Grenfell, under the name of the G. G. Syndicate. The early work does not appear to have been very successful in locating the true run of the copper lodes, and partly on account of this and partly because of the inaccessibility of the mine the Consolidated Gold Fields sold their interest in the proposition to Mr. Grenfell. About this time Mr. James M. Calderwood, who had considerable experience of copper mining in America, became associated with the concern as consulting engineer. After close and careful inspection of the mineralised zone, Mr. Calderwood planned a new, more systematic, and thorough development policy, with what results it will be the object of this series of articles to describe. Mr. Calderwood's scheme of exploitation soon began to bear excellent fruit. Gradually it became evident that an extensive and enduring mineralised belt containing lenses of high grade copper ore had been located. In January, 1905, the Messina (Transvaal) Development Company, Ltd., was registered in London with a capital of £110,000, and in January, 1906, the shipment of ore was commenced. The company, to September, 1906, despatched to England 290 tons of extremely rich selected copper ore, containing about 60 to 65 per cent. of copper metal to the ton. It should be explained that this rich ore was selected, and from about three tons of ore extracted from the stopes about one ton of the very richest portions of ore was picked out. The ore sent away was transported by wagon from the property to Pietersburg. From Pietersburg it was sent by rail via Delagoa Bay, whence it was shipped to Liverpool. On arrival in England it was sold on assay, and the last shipment for which a settlement in 1906 was effected realised 16s. 3d. per unit.

THE OLD TRANSPORT METHOD: A DONKEY WAGON AT MESSINA.

REMOVAL OF TRANSPORT DIFFICULTIES.

The mine continued to open up very satisfactorily, and it soon came to be realised that its development coupled with the general mineral and agricultural possibilities of the Zoutpansberg justified the extension of the line from Pietersburg northwards. In the middle of 1908 a concentration mill of 50 tons per day capacity was started up and the Bonanza shoot and south lodes had been exploited to the third level with eminently satisfactory disclosures. In this year, too, Mr. R. J. Frecheville, the well-known English mining expert, visited the property and in the course of a favourable report emphasized the desirability of securing railway communication between the mine and Pietersburg. After protracted negotiations an agreement between the company and the Transvaal Government providing for construction of the railway was signed, and the actual work of linking up the mine with the South African railway system was commenced in 1911. Arrangements were come to in 1910 with the Government for extension of the Selati Railway to Messina. Such line will give the mine direct access to Delagoa Bay, 310 miles distant, and 300 miles shorter than via Pietersburg. By the middle of 1911 the Pietersburg-Messina line had been advanced to Bandolier Kop, and at the meeting held a year ago Mr. Calderwood remarked that although the company had to that date been a developing concern the total production of copper to that date had been 10,861 tons of concentrate of a gross value of £280,000, "every ton of which had to be transported to railhead, at first a distance of about 160 miles, which was later reduced to 130 miles by the construction of a new road, and now to about 60 miles and gradually getting shorter as the railway advances."

A MOMENTOUS YEAR.

This year has been a momentous one for the company. Development has been pushed on and the ninth level has been reached. Smelting operations (the first to be undertaken on anything approaching an important scale in this country) began a month or two ago and have borne excellent results. A thoroughly modern and efficient concentrator plant of 250 tons a day capacity has been started up and this, too, is performing excellent service. Furthermore, the railway has been pushed ahead, and within the next few weeks there will be through connection between the mine and the various ports and industrial centres of the subcontinent. Messina is coming into its own.

AN ANCIENT WORKING AT MESSINA.

[Next week's article of this series will deal with the geological features of the Messina Company's property, the lodes and their mineralisation, the methods of mining adopted, and the general underground features of the proposition.]

KIMBERLEY SCHOOL OF MINES.

Representatives of the Mechanical and Electrical Engineers and Underground Staff of De Beers Consolidated Mines, Limited, in conference with Professor Yates at the School of Mines, Kimberley. Mr Williams, General Manager of the Company, and Mr Harbottle, Assistant General Manager, in the centre of the group.

Photo by Seidenstucker.

THE OUTLOOK FOR BETTER MINING AND GENERAL CONDITIONS.

Inspiriting Review by Mr. G. Imroth of Recent Progress and Problems of the Industry—Health and Labour Questions—Need of Diamond Combine—Small Drill Possibilities.

SPEAKING at the annual general meeting of the Johannesbugr Consolidated Investment Company, Ltd., on Monday, Mr. Gustav Imroth said:—It is dangerous at all times to make predictions, but I venture to say that if as the result of the year's work we can place before you the statements which you are now asked to adopt, then I think I am justified in saying that under more normal conditions we have a right to expect better results, but I feel it is on the lips of everyone in this room, and a great many more in this town, the country, and those interested in our affairs on the other side of the water, to ask the question, "When are we going to see better mining conditions, and, as a consequence, greater prosperity in the whole of South Africa?" My answer to that question is, "When we have succeeded in our present whole-hearted endeavour to improve the health conditions of our mines." It is an economic axiom that risky occupations and high wages go together. I am free to confess that very few understood or appreciated the extent to which mining risks on the Rand had affected our labour supply, and therefore our cost of production. We have learned during the last few months that the discontent of the white workers was greater than we had any reason to believe. Let us therefore accept that position. Our first duty as business men is to reduce and remove such abnormal mining risks as closer expert investigation may prove to exist. This work has already been taken in hand, and shareholders may rest assured that our efforts will not be relaxed till we can show that the Rand has recovered its position as the premier gold mining industry in the world. Preparatory to a more complete and thorough investigation of the sanitation of the Rand and its mines, the services of Colonel Gorgas, who is probably the greatest living authority of health conditions affecting large bodies of labourers, have been secured. He will get every assistance from us, and we shall place at his disposal the best expert advice we possess. I am satisfied that the mines of this country can be made as healthy as those of any other country, for we have probably the best climatic conditions in the world. Already a great deal has been done to improve the old conditions, which were, no doubt, greatly responsible for the recent unrest. The compulsory use of water and sprays and better regulations, have enormously lessened the amount of dust in the mines, and already we have abundant evidence that risks, particularly those of miners' phthisis, have been greatly reduced, and here it is gratifying to record the almost unanimous opinion of the Government mine inspectors that health conditions in the mines are much improved. Speaking personally, I may assure shareholders that we are studying these difficult problems with the best will in the world, to improve conditions and remove all drawbacks to the progress of the industry. But I may say that these industrial questions extend beyond the mines. It is a matter which deserves the attention not only of the mine employees, but of all employers and the Government, to improve what I may call the South African standard of efficiency. I have taken some little interest in educational matters since I have been on the Rand, and it appears to me that a great deal can be done to train the South African youths as skilled workers in the industries of the country. We suffer on the mines from the fact that a very large proportion of the children who leave our Government schools are not trained to habits of industry and work, and do not therefore take their rightful place in the workshops of South Africa. I do not intend to lead you away from the immediate subject before me, but I have made these remarks in order that you may understand that the whole question of our labour and industrial problems will receive wide and sympathetic treatment. The events of a few months past, which I might almost call revolutionary, have made it apparent that on the right solution of these questions depends the whole future of the South African working classes. We must train our youths, and put within their reach that skilled knowledge and manual training which will enable them to hold their own against the skilled workers of other countries, and I should like to express the hope that the Government will not neglect the lesson we have learned lately, and the dangers of allowing large sections of the population to grow up without habits of settled industry. Before leaving this point, I should like to add that while we are prepared as employers to handle these matters energetically and sympathetically, we hope that the leaders of the workers generally will act with us in a spirit of co-operation and goodwill, and will avoid creating difficulties and unrest out of the little everyday mistakes which are inseparable from the administration of such a vast and complex organisation as the Rand mining industry. We have lately recognised the Transvaal Miners' Association as a corporate body of organised labour, and I am hopeful that the results which will follow this action will enable us to get more closely into touch with the opinions of the mine workers and prove of benefit to all concerned. The Chairman has referred to the charge which is laid against the industry in regard to the frequent changes of management which lead to unrest, and here I should like to mention the subject of changes of the personnel among the underground men. I think this is a fault which, if resolutely tackled, could, to a certain extent, be rectified. How can it be expected to obtain the best results out of a gang of natives when the white boss is changed two or three times during the month? It is difficult to apportion the blame for this sort of thing, for there is no doubt that while a large number of men leave the mines of their own accord, in a great number of cases the discharges were due indirectly to a rather short-sighted policy on the part of the mine officials. The contract system, with the big cheque to some men and a bare living to others, with its feast of wages one month and famine the next, is also a potent factor in causing discontent and change, and it is questionable whether the advantages claimed for it compensate us for its obvious defects. While it is probably true that a given piece of work can, under present-day conditions, be done cheaper by contract than under day's pay, yet I am not sure that were a day's pay and bonus adopted as a general rule throughout the Rand we should not, especially in certain classes of mine work, obtain results superior to those we are getting to-day. In any case, I am positive that it would be of immense advantage to the industry were our underground force less of a floating one. It has become almost a custom at periodical intervals to refer to the possibilities of the small rock drill, more particularly as regards its influence on the native labour supply, and I will offer no apology for referring briefly to this matter. It has been fairly proved that in wide stopes the large rock drill is more economical than hand labour, but in narrow stopes I am advised that up to the present we have been unable to break ground by machines as cheaply as by hammer boys. It seems likely that hammer drills will prove to be more suitable for this work than the old type of reciprocating drill, and that the combination of a faster drilling and lighter weight machine will solve our difficulty and enable us to compete successfully with hand labour in narrow stopes. While, however, we are continually searching for the ideal small machine, let us not lose sight of the fact that it is for us to make the best use of the tools we have. At the present time this can hardly be said to be the case. From the results of tests recently made, it would seem that the drilling results of the machines on the Rand as a whole are a long way behind what we have a right to expect. Now that this matter has been brought forcibly home to us, we are endeavouring to devise some means whereby we shall be able to get a better duty out of our machines. In addition to this, I would like to mention that the trial of a certain type of small hammer drill on one of the mines of this group has given very encouraging results. Though the machines have been running for some months with increasing success, I do not feel justified, in view of the many disappointments in the past, to speak positively with regard to the future. I will say, however, taking into account the efficiency of the machines, together with the scope which it offers for vastly improved methods of mining, especially in localities where the reef is fairly flat, that I see before us a field of great possibilities, for, in addition to the direct saving on the cost of mining, there is a likelihood of the hammer boy being practically eliminated. Anyone, however slightly he may be acquainted with local conditions, can see what an enormous effect this would have on the future of the industry. The heavy expenditure which is now incurred on the recruiting of natives would be considerably reduced; each mine would be able to regulate its labour supply, with all the saving that that would mean, and in general raise the standard of efficiency throughout the mines on the Rand. As usual, during the winter months we have seen the customary exodus of natives, and this season the position has been aggravated through the late disturbances. I am glad to say, however, that we expect the renewals during this month will quite counterbalance the time-expired natives leaving these fields, and from the advice of our recruiters we have every reason to expect an increase in the labour force from next month. With regard to diamond shares, our Chairman has told you that during the year we have increased our holding substantially, and in this connection I should like to repeat the opinion I expressed at our last meeting, namely, that an article of luxury such as the diamond, the production of which is in so few hands, is eminently suited to the control of a combine, not only in the interests of the producers and the revenue of the country, but to everyone interested in diamonds, and to this statement I wish to add that only when such a combine is brought about can the best results be achieved. It is well to remember that if the De Beers Company, formerly controlled by astute men like the late Mr. Cecil Rhodes, Mr. Beit, Sir Julius Wernher, and Mr. Barnato, found it necessary to sell their diamonds through one organisation, the London Diamond Syndicate, when practically there was only one producer, how much more necessary and desirable is it, now that new competitors, such as the Premier (Transvaal) Diamond Mining Company, Ltd., and German South-West Africa, have come into the field, to handle their diamonds through a combine which would practically control the diamond market of the world. The diamond business is a competitive one, and it stands to reason that enormous advantage would result were such a combination brought about and competition between the sellers extinguished. In conclusion, I cannot allow this opportunity to pass without saying that the late unrest in our midst has undoubtedly created an air of pessimism in regard to the mining industry, and it is adversely affecting the credit of this country, but gentlemen, we who have had many years of experience of South Africa know its recuperative powers, and I entertain the hope that before very long the effects of the late upheaval will have been effaced.

The four Bills of peculiar concern to the Transvaal to be introduced in the next session of Parliament—the Factory Bill, the Industrial Disputes Bill, Workmen's Wages Protection Bill, and Trades' Societies' Recognition Bill, though drafted and printed, have not been before the Cabinet yet, but an early publication in the *Gazette* is expected.

COPPER PROSPECTS AND ANCIENT WORKINGS IN THE NORTHERN TRANSVAAL.

Interesting Facts Concerning the Past and Future of the Industry.

THE paper by Mr. J. Allan Woodburn, M.Inst.M.M., Associate Member of the Chemical, Metallurgical and Mining Society, on "Mining Copper Ores at Messina," read recently before the Chemical, Metallurgical and Mining Society, has evoked the following remarks from Mr. A. L. Chambers. Mr. Chambers said, *inter alia:*—

As a former manager of Messina, I have read with interest Mr. Woodburn's paper describing the methods of mining there, and I would like to congratulate him on his most interesting record. Having had considerable experience in the Northern Transvaal and the occurrences of copper there, I feel that perhaps a few remarks resulting from my personal observations may be acceptable, as that district is one about which very little information is available and practically no data regarding the base metals "which should some day be a considerable source of value to the country." Occurrences of copper have been located at different points over the area extending along the southern bank of the Limpopo River for about 100 miles, and south about 35 miles, approximately. Molybdenite has also been found in this area, while coal measures have been discovered with coal of very good quality occurring in places; gold and diamonds are also reported to have been discovered. The country, however, has never been thoroughly prospected; it is covered with thick dense bush, mostly of thorn trees, through which it is often necessary to cut one's way. Water is very scarce and the places where it can be found frequently very far between. . . . . . The area under review is extremely interesting from a geological aspect. The principal features from the north-west part of the area are the gneiss formation, the oldest known formation in Africa, called by Dr. Voigt "The Fundamental Gneiss,"[*] consisting principally of mica gneiss, hornblend gneiss epidote, and garnet gneisses. To the south or south-east of these the surface is covered with large areas of sandstone outliers of the Waterberg series, which have apparently been detached from the main belt, represented here by the Zoutpansberg range of mountains, through the intrusion of extensive ultra basic dykes, which can be traced for many miles, striking north-east to south-west. The intrusion of these dykes appears to be the first of a series of extensive earth movements, which have taken place over a very large area, creating intense pressure, the result of this being the metamorphism of the original formation, very interesting instances of which both in the nature of contact metamorphism and regional metamorphism being met with, while, from the same cause, shearing and fissuring has resulted. The latter being principally due to intrusion of subsequent or later date dykes, also of very large extent, which have been the principal feature of the second stage of earth movement. The third stage being apparently that of contraction, when the cooling or settling down of the disturbed area took place, resulting in large segregations of white vitreous quartz and the filling of the dyke created fissures with a gange or product of magma, at the same time mineralising gases and solutions generated by the magma ascended and by their agency the copper ores have been deposited. The occurrence of, or deposits of, copper are found under various conditions, such as the pink or red gneissoid rock, where crushing and shearing due to the first movement occurred, and where the later date dykes have opened or created fissures; these fissures have become filled with a gangue in which the copper occurs in the form of irregular lumps and lenticular masses, sometimes accompanied by secondary quartz and hematite. The gangue of these fissures is of a soft nature, very much altered and as it appears to-day is evidently the product of metasomatic replacement, while a curious feature of the deposits is that lumps of iron, in appearance like cuprite, often form part and parcel of masses of rich sulphide ore, the one merging into the other without any line of demarcation. At the water level, where the water fluctuates between the wet and dry seasons, the copper values are frequently found entirely leached out and the remaining gangue or fissure filling takes the appearance of a kaolin; sometimes the leaching has been so perfect that not even a copper stain has been left. In developing or opening up these copper lodes, it is necessary to establish a theory as to the possible and probable direction and extent of fissuring certain dyke intrusions would produce in bursting through the earth's crust, the origin whence the fissure filling was derived, and source from which the mineralising solutions came. I mention this on account of the peculiar nature of copper, which, being soluble, by the action of circulating descending waters, is in this type of formation, which has been so much fractured, frequently carried in solution along the lines of least resistance and redeposited in cavities and along planes which have no direct connection with the lode or true lines of fissuring along which the ascending mineralising solutions came, without a theory to guide, which theory it is very easy to quickly prove the correctness of. It is quite possible that considerable sums of money may be spent in useless work, without any sound results having been achieved. Another type of occurrence is that of the nature of igneous sheets, where secondary infiltration of quartz, with sulphides of metal, has taken place. Also copper has been found to occur in fissures and cavities in the overlying sedimentary rock, in which cases mineralization also seems to be governed or due to the fissuring, caused by extensive dykes. An interesting feature of this type of occurrence is native copper, which has been found in small lenticular masses. In all the copper occurrences so far reported there does not seem to have been found any instance with an oxidised or carbonate zone. The sulphide or zone of secondary enrichment being found at, or quite close to the surface. In the early stages of the development of the copper occurrences where the sulphide ore occurs in lenzes or lenticular masses, it is possible, by careful mining, to procure an output, which very materially helps towards paying the expenses, before sufficient data has been obtained in order to determine the type and capacity of the concentrating or reduction plant most suitable for the future. In this type of mining only the richest ore is stoped, rough sorting takes place underground, and the selected ore is then bagged and sent to the surface, where it is finally sorted, cobbed and bagged for shipment, while the fines from the stope and hand-sorting are screened and by means of hand jigs a rich concentrate is produced ready for shipment. Scattered through the district are found groups of ancient workings, varying in size from small pot-holes to several hundred feet in length, frequently the groups of workings cover considerable areas, thereby conveying the impression that an extensive copper mining industry must have at one time been carried on in that part of the Transvaal, for in a number of cases these old workings are for that type of mining by no means shallow, instances being known where they have gone down to nearly 80 feet vertical depth. In any case there is abundant evidence that many thousand of tons of ore have been mined. therefore the quantity of copper removed must have been considerable and with such slow methods of mining there is no doubt but what to-day is a little known district was at one time a busy and largely populated mining area. The method of working employed was that of chipping out the ore by means of iron gads and stone hammers. Such methods of mining were possible owing to the soft and peculiar nature of the gangue, which, on exposure to the air, disintegrates rapidly, for instance a face, which is apparently hard to-day, will by exposure overnight, soften and yield quite a lot of ore to a gad or small pick next day. The ore was then collected in baskets made of reeds, and removed to the surface, where sorting took place, the rich copper ore being collected and sent to the smelters while the gangue was used for stope filling. It is quite an open question as to whether the discarded gangue was used for stope filling while work was in progress or not; possibly it was to some extent, but a peculiar feature of these old workings is that as we find them to-day, they are in appearance elipitical depressions with a small raised bank of debris conforming to the sides of the old open stopes, and showing every evidence that they were filled in by hand. Native tradition says that many mines existed in various parts of the country when their forefathers came into it, and that when the white man came their kings and chiefs passed a law that these were all to be filled in, which was done, and further any native disclosing these ancient mines to a white man would be put to death by starvation and torture. Their idea being that if the white man found these mines, they would remain, and if they failed to find them they would go away. The truth of the above traditions is strongly confirmed by the fact that even to-day natives are extremely reluctant and almost absolutely refuse to disclose the position of ancient workings, and in many instances in the Transvaal crude methods of obliteration are only too apparent. Personally, I have visited ancient workings whose existence has been disclosed by the caving of a piece of ground leaving a small opening into which game has bolted, thus attracting attention to what would otherwise not have been noticed. In one case, a stope, over 100 feet in length, and over 50 feet in depth, with openings between pillars leading to what appeared to be an additional extensive stope, was exposed, and yet there was not on surface the least evidence to anticipate the existence of such extensive mining operations. In some instances circular shafts have been sunk to one side of the ore body, mined, and where these have been cleaned out, or have become exposed by the subsidence of the debris filling the old notches or holes where the workers placed their toes in going up or down, are clearly visible. In carrying on the mining operations for copper, that industry also entailed others, such as mining iron, smelting and making the implements required, also smelting the copper ore into ingots and bars, the making of copper ornaments for the neck, wrist and ankles, and owing to the soft nature of the copper, it was drawn into wire by passing it through holes in plates made of iron, gradually reducing it to the required size; some of these old plates for wire drawing were in existence among the natives until quite recent years, and also specimens of their work in copper ornaments, while the iron gads and stone-hammers are occasionally found at the bottom of the old stopes, the head of the gads being barred over, similar to the drill heads in use to-day. The copper produced by smelting was first cast into ingots similar in shape to the old oblong cowbell, having along its apex a series of rows of spikes, the number of spikes denoting its value for trade purposes, so that in a sense it represented a crude species of coinage or the equivalent of such. For the purpose of making ornaments these ingots were again cast into bars or rods about ¾ inch diameter and about 16 inches to 18 inches long, and these again were drawn out or worked according to the various ornaments required. There is no doubt, judging from the size and extent of the old workings, that their origin is of considerable antiquity, and it is very probable that it dates back to the period of the occupation of the country by those people who built the Zimbabwe, and the metal copper occurring in such quantities as it does in a soft gangue, and itself of such a soft ductile nature, the industry was, after the departure of the originators, to some extent carried on by the natives and gradually died out. The idea that these ancient workings are purely of native origin is, on account of their size, and to those who know the African native, absolutely untenable; further, they must have entailed a certain amount of organisation in the mining and the manufacture of the iron implements, which took place many miles away from the copper mines, also the organization of an industry on such a scale as the mining of the copper ore and the smelting operations, the Kaffir is incapable of.

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[*] See Proceedings of Geological Society of S.A., September 4, 1905.

Their antiquity may be considered further established by the fact that slow growing trees of considerable size are found growing in the debris in the old workings themselves. A curious feature regarding these old workings is that, no matter how large an area they cover, there are no indications left as to the type of housing accommodation which they used, and no foundations of any sort, such as one might expect from such an extensive mining industry. From the days of this early industry to the present time is a very far cry, and no doubt much that is interesting could be written if only the controllers of the former industry had left behind them assay plans and records, but I question if even these could be as valuable as the paper in which Mr. Woodburn so ably describes the modern methods employed.

ELECTRIC BLASTING ON THE RAND.

Discussion on its Advantages—Case for System on Grounds of Health, Safety and Economy.

The subject of electric blasting as a system for use in the Witwatersrand gold mines was exhaustively treated in a paper read last Saturday evening at the monthly meeting of the Chemical, Metallurgical and Mining Society of South Africa. The authors of the paper are Messrs. William Cullen, Thomas Donaldson and W. Waters. The advantages claimed for electric blasting and the probable effects of the system were considered in detail.

NOT A NEW SYSTEM.

The authors point out that in Natal electric blasting has been compulsory in "fiery" coal mines for many years, while in Rhodesia several gold mine shafts have been sunk by its aid. In the Transvaal and Orange Free State electric blasting is employed in several coal mines. The Transvaal and Delagoa Bay Colliery has used it exclusively for over a decade; the Middelburg Steam Coal and Coke Company has practically done the same; while the Vereeniging Estates have also used it to a considerable extent. At the Premier Diamond Mine, when working yellow ground, electric blasting was largely used, and found to be more economical than safety fuse. When, however, blue ground had to be dealt with, the action of a row of simultaneous shots brought down huge masses of rock, which required to be re-blasted and broken up for loading. Safety-fuse blasting was, therefore, reverted to, as the rock was broken smaller by shots acting independently of each other. Electric delay action fuses could be used with success at the Premier, but as all the workings are in the open, the question of health conditions is not of primary importance. In 1904 experiments in electric blasting were conducted at the Simmer and Jack East mine by Mr. Catlin, of the Consolidated Gold Fields. In 1907 trials were conducted at seven of the most important gold mines. These experiments ranged over a period from May, 1907, to August, 1911. "These proved conclusively that, so far as actual rock-breaking is concerned, electric blasting gave results at least equal to those obtained with ordinary safety fuse. At that time, however, the question of cost appeared to be the first consideration, and, seeing that safety fuse was apparently the cheaper, no material interest in electric blasting was aroused amongst mine managers. It was consequently left to the contractor to say whether or not he would adopt it." Proceeding, the authors of the paper state: "We have for several years contemplated writing a paper on this subject, but the apparent lack of interest taken led us to the conclusion that the same would be premature. It is, therefore, all the more pleasant to find that at last a real and earnest interest in electric blasting has been aroused in the Transvaal, mainly because everyone is anxious to do his utmost to minimise and, if possible, eradicate that terrible scourge miners' phthisis. The first practical step was taken by the City Deep, and sinking operations with electric blasting have been carried on there for several months. We must, however, give credit to the Albu group for being the first to equip a whole mine for electric blasting. This has been done at the Meyer and Charlton." Coming to a consideration of the probable effects of electric blasting, and the advantages claimed for it, the authors state that it is quite certain that the results will be far-reaching, and deal with these under the three headings: (1) Health conditions; (2) safety; (3) economy.

HEALTH CONSIDERATIONS.

Under the first heading, the writers point to the accepted fact that rock dust causes infinitely greater damage to human beings than is caused by noxious gases. "Miners, of course, know from actual experience that safety fuse gives off a very large amount of smoke, which must naturally hold in suspension a large quantity of very fine dust. Electric blasting will remove the necessity for white miners and natives having to rush around to light up at firing ('cheesa') time, and then travel through dust and fume-laden drives, stopes, etc.; as, except in special circumstances, no charges should require to be exploded before all workers are out of the mine. Instead of the rush always in evidence with safety-fuse blasting, the electric system will enable the operators to explode the charges at their own convenience, and from a place far removed from danger zones." On the question of safety, the authors of the paper state: "It surely must be better for a miner, when working in a shaft or winze, to be able to explode his charges from a place of safety than to be obliged to light up each individual shot and then either climb up ropes or ladders, or be hauled up by bucket or skip, with the ever-present risk that some mishap may occur to prevent his getting safely away before any explosions occur."

QUESTION OF ECONOMY.

On the question of economy, which (the authors state) comes last in importance, and in their opinion should also be considered as least, first considerations made it appear that blasting with electricity would prove more costly than with safety fuse. Taking the actual cost of materials used up in each case, the figures work out roughly as follows: "Electric: 1,000 shots. Cost of instantaneous electric detonator and delay action fuses, with detonator, £7 12s. 6d. Safety fuse: 1,000 shots. Cost of detonators, safety fuse and fuse lighters, £5 12s. 6d. This leaves a difference of £2 per 1,000 shots in favour of safety fuse. We must, however, look for economy in other directions. So far as actual rock-breaking results in metalliferous mines are concerned, the only evident advantage to be gained by electric blasting over safety fuse is in connection with 'cuts.' . . . . We know from practical experience and experiments that no safety fuse in the world, no matter what price be paid for it, can be made so perfect in regularity of burning speed that identical lights lighted simultaneously can be guaranteed to burn through in identical periods. When 'cuts' are fired with instantaneous electric detonators, all charges attain their maximum force at the same instant, and better results are consequently obtained." It was anticipated that if the system employed at the Meyer and Charlton was generally adopted, the extra time afforded for actual work at the face would ensure greater footage being broken, and thus compensate for the higher cost of actual materials used.

DUST DANGERS.

Mr. Waters read the first portion of the paper, and Mr. Donaldson described illustrations given by lantern slides, which detailed the nature and construction of the various appliances required for electric blasting.

Mr. E. Pam, manager, Geldenhuis Deep, in proposing a vote of thanks to the authors for their exceedingly instructive paper, remarked that the majority of metalliferous mines in Europe still used safety fuses. The cost of the extra blasting gang had not been taken account of in the paper. Although all agreed that there was a lot of dust about in blasting time, comparatively few suffered. At best 10 per cent. of the underground men could be injured by dust after blasting. Nevertheless, the 10 per cent. was a very considerable proportion to consider. Electric blasting on the Rand would entail a pretty big expenditure, and probably would not be adopted eagerly by all properties, but much good might be done by the adoption of a system by which the bottom levels of the upcast shafts were immediately cleared.

Professor Celliers, of the School of Mines, seconded the vote of thanks.

ABOUT MISFIRES.

Mr. Waters replied to questions put by Mr. Roberts, who spoke of the number of misfires on the sink of the City Deep shaft. He said there were no definite statistics, but, as far as they knew, the largest number of misfires had been caused by faulty connection.

Replying to another query, Mr. Waters said that at the Meyer and Charlton misfires had been considerably reduced. Here, although the system was just starting, misfires were considerably less than when using the safety fuse. In another six months, he contended, it was possible that there would be no misfires at all.

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THE ROOIBERG MEETING.

Col. Dalrymple Exhaustively Reviews Position and Prospects of the Mine—Ore Reserves—Question of Working Alluvial—Some Questions Answered.

At the annual meeting of the Rooiberg Company on Wednesday, the Chairman, Col. Dalrymple, having reviewed the reports and accounts at length, in discussing the prospects of the mine, said *inter alia*:—

I dealt at such length last year with general expenditure and realisation charges that, as the figures for the current year are somewhat similar, I do not think it is necessary to again go into full details. Dealing now with the mine, we have lately had under review with the consulting engineer and acting manager the question of the policy of development. In the main we have been working a series of five north and south lodes, namely, the Union, Nascent, "H.," Moderate and Labour, intersected by five east and west fissures, namely, the Bond, Pyritic, Progress, National and Federal. After some years' experience of the behaviour of these lodes and their tin bearing qualities, it appears desirable to alter the general programme which has hitherto been in vogue of driving on practically every new discovery, and after going most carefully into the matter we have decided to do the bulk of our development in the main mine for twelve months on the Union lode, as not only has it been the most consistent ore bearer in the past, but also it has been traced a greater distance than any of the other lodes, both laterally and in depth, and, further, apparently its payable portions are not confined to one area as is the case with the Progress lode. While concentrating most of our work on the Union lode, we shall by no means neglect the other fissures, but driving on these other lodes will not be so rapidly advanced as on the Union lode. As has previously been done, all cross fissures encountered by the workings will continue to be marked on the plans, and also in the mine, in the latter case by blasting out a round where each find is made.

EXPENDITURE JUSTIFIED.

I stated somewhat earlier in my remarks that I should be able to justify the expenditure which we incurred in surface prospecting and exploration. A careful estimate has been prepared of the ore at grass as at the 30th of September resulting from this work, and we find that we have ore lying on the surface at the various points where the discoveries have been made through this prospecting totalling 4,479 short tons with an average value *in situ* of 8.4 per cent. metallic tin. We estimate the profit to be derived from this tonnage, taking tin at £190 per ton, should approximate £40,000, apart from a considerable tonnage which has gone to the mill from time to time from this source and tonnage exposed but not yet developed. I think this in every way justifies the systematic manner in which this prospecting has been carried on. Speaking of the policy of the Board as regards shaft sinking and development in depth, both No. 1 and 2 main shafts have been sunk to the 310ft. level, and the 410ft. level is now being opened up on the Union lode through two winzes. A great amount of exploration and development remains to be done on all the levels which have been opened in the main mine from the 63ft. to the 410ft. levels, without taking any account of the ever-increasing tin-bearing area which is being opened up by the prospecting works, and for this reason we do not propose to continue sinking any of our main shafts during the current year. In all probability we shall sink our No. 2 main shaft to the 410 feet level during 1914-15, and thereafter probably open up the ground down to the plane of the 610 feet level by means of winzes. Some of you will recollect that last year I reported that, on the advice of the manager, the Board has resolved. in future, not to make any declaration as to the company's ore reserves. The Board's reasons for coming to this decision were fully set forth, and we were quite justified in the course we adopted. However, since the meeting, references to this decision have reached the Board, and there is no doubt that there is a difference of opinion on the point; the matter has, therefore, been again taken under review by the Board, and you will notice that, in the reports of the consulting engineer and manager, which are now before you, certain statements as to the ore reserve position are given. I wish, however, again to make it perfectly clear to shareholders that while every care is taken in forming the estimates of the ore reserves now placed before them, they cannot be looked on as entirely reliable. Comparisons have again been made between relative costs underground at our mine and at Zaaiplaats. At Zaaiplaats the ore mainly occurs in the form of pipes and the process of mining the ore consists in following these pipes from the surface, the ore being more or less continuous throughout the length of the pipe. It will readily be seen that in the working of an occurrence of this nature there will be a comparatively small amount of dead work to do. On the other hand, at Rooiberg the ore occurs in the form of lodes in which there are lenses, payable and otherwise, separated from each other usually by long stretches of barren ground, hence, systematic search for these lenses entails a very large amount of driving through this barren ground. It is, therefore, impossible to arrive at a satisfactory comparison with Zaaiplaats owing to the totally dissimilar nature of the occurrences. During the year under review our actual mining costs were 7s. 2d., in addition to this the expenditure on prospecting, exploration and development was 14s. 10d., and shaft sinking 1s. 11d. per ton milled.

QUESTION OF MARKETING.

The marketing of concentrates is a branch of our work the importance of which must not be overlooked. We have endeavoured in the past to make up our black tin for sale so that it has a value by chemical assay of approximately 70 per cent. metallic tin. The consulting engineer has been investigating this problem very closely, and has come to the conclusion that by working up low grade concentrates from, say, 45 per cent. value to 70 per cent., actual losses of white metal take place which go away in the final tailing. Shareholders may not all be aware that even after we have obtained our concentrates there still remains much to be done in shipping and selling them. Returning charges figure at a heavy amount, over £16,000 for last year, and we are penalised for impurities, etc., but if in order to ship a concentrate free from penalty we are losing metal in the course of the necessary buddling and other operations, we must ascertain whether this metal, if retained in a lower grade concentrate, would repay us for the extra cost of shipping and returning charges and penalties. This position is being most carefully investigated. We have no complaint to make against the smelters. They naturally want to purchase concentrates in the purest possible form, but if we can make a larger profit by shipping a certain proportion of our output as somewhat lower grade concentrate at greater profit to the company we shall do so. Another matter to which I would like to refer, and which was forecasted in the last quarterly report, is the testing of the capacity of the reduction works on mine ore only. This test is being carried on in the current month. This is the first time that mine ore only has been treated in the new plant, and our reason more particularly for the test is that we wish to ascertain exactly what the capabilities of the plant now are, especially with reference to the percentages of extraction which can be obtained from run of mine ore only, thus anticipating what we may expect from the plant and general running of the mine when all our sands and slimes are exhausted. Since the publication of the annual report the company has acquired by purchase the surface rights of the remaining portion of farm Haartebeestfontein, consequently, as soon as transfer is effected, we shall hold the freehold as well as the mineral rights over the whole farm.

LABOUR AND HEALTH.

I am pleased to say that, throughout the year, the health of the employees, both white and native, has been good. The water supply has continued satisfactory, and, at the end of September there were 16,638,000 gallons in the dam, while the boreholes continue to yield average results. The decision to construct a dam to conserve water on the company's property has had a most important bearing on the regularity of the work during the past year, as it is quite certain that, had the dam not been constructed, we should have been short of water towards the end of the dry season.

ALLUVIAL DEPOSITS.

I will now ask you to bear with me for a few minutes on a question which is exercising our minds very much at the moment, namely, the possibility of our being able to work the alluvial deposits at a profit, and, even if we fail to work at a profit, whether we should not adopt more up-to-date methods in baring formation in connection with our prospecting work, instead of the system at present in vogue, which is by the shovel only—a slow and tedious process. We have known for years that the surface soil of a great part of our holding contains tin: too low in grade to handle in our reduction works, but possibly profitable if sluiced for. As you are aware, we have no permanent running stream on the farms held by your company, and all water, therefore, which would be necessary for the above purpose would have to be conserved during the rainy season and economically handled during subsequent operations. The success of the present dam which supplies the works led us to have a complete survey made of the whole of our holding, which shows that we can construct dams at various points on the dry water courses which, together with our existing dam, would have a total capacity of some 150 to 200 million gallons of water. About 120 acres have been prospected by means of hand drills along the banks of the dry water courses, and the borehole results show assays varying from 0.1 per cent. to 0.5 per cent., and in some cases richer values. The borings were collected and roughly sluiced, and tin was actually won to the extent of 0.75 lbs. of white metal per cubic yard. It is thought that with carefully designed appliances one pound of metallic tin could have been won to the cubic yard, which could, probably, with extensive operations, be made profitable. But the capital expenditure involved has made it necessary for us to go slowly at present. Quite apart, however, from any direct profit which we might make from these sluicing operations, we recognise that prospecting and exploration would be greatly accelerated if we could remove the overburden by means of water. This surface stratum varies in thickness from five to twelve feet, and consists mostly of decomposed sandstone, which is easily amenable to sluicing operations. Our present methods consist entirely of shovel work, and are laborious and slow in result. In fact, some of our most successful "finds" have been discovered after months of surface trenching in this loose sand, all of which could have been removed with a reasonable head of water in a few days. The rock would have been laid absolutely bare, thus probably exposing every crack and fissure;

whereas now it is purely a matter of chance whether we uncover these fissures or not. In fact, trenches which have entailed a large amount of work have exposed nothing, whereas a few feet away another trench has uncovered most valuable tin-bearing lodes. It is estimated that by effective sluicing we could possibly uncover more country in a week than we at present do by shovelling in several months. So you will see that quite apart from the profit which might accrue from sluicing this overburden, we should actually be saving a large sum of money in the long run in carrying out our exploration and prospecting. There are, however, many things to be taken into consideration. In sluicing away large quantities of loose sand and other surface alluvial deposits, provision has to be made for the economical handling and placing of the tailings. The work has to be done systematically, and the lower portions of the farm would have to be treated first, so that as the lowest paddock was uncovered it could be used as a depositing site for the tailings of the next paddock above, and so on. Then it would be necessary to carefully safeguard our present water-courses so that they did not become blocked with debris. All these matters are receiving the most careful attention of your technical staff. Information is being obtained from other parts of the world where prospecting is being carried out in this way, so that if your Board does decide, even on a small scale, to commence operations on these lines, the possibility of initial mistakes due to inexperience will be reduced to a minimum. It is quite impossible for us, at present, to give you reliable figures either on what you may expect as a yield from this alluvial, or whether it might be profitable in itself, or the amount of money which you may save by carrying out your prospecting operations in this present, attractive from both aspects. I have personally inspected dumps of sand at Rooiberg which have been cleaned out of prospecting works and which have shown excellent rich results of alluvial tin in the pan, and by washing the country clean in this way you will have to operate the rich and poor sands as they occur. This is not a scheme which can be put into operation without considerable delay, as we have to impound the water first, and this could not be carried out till this rany season is over, hence water would not be available before the end of 1914 at the earliest. Your manager, Mr. Schoch, who has been on a holiday and returns this week, has taken advantage of his visit to the United States to investigate the sluicing problem and methods in that country, and we expect to have his views in front of us at an early date.

SOME QUESTIONS.

There being no questions asked, the Chairman said: I will now deal with some questions, which a shareholder, who has been unable to attend this meeting, has written requesting me to reply to at the meeting. In each case I will first read the question and follow on with my reply thereto: What prospect is there of the general working expenses in connection with the property being reduced in the future?—With present methods, the only way to substantially reduce working expenses would be by the curtailment of development and exploration; therefore, as long as development in the mine and surface prospecting and exploration is reproductive, and discloses such forecasts of results as indicated by me in my speech, it is not probable there will be material reduction. Whether it is necessary now to retain the services of the consulting engineer?—It is more necessary now than ever for the Board to be assisted by the best technical advice and experience it can obtain, and, in the Board's opinion, this is in the best interests of shareholders. Whether it is the intention of the directors to regulate the monthly output and ensure regular dividends by crushing rich and less retreated ore when the price of tin is low and reversing the procedure when price of tin is high?—The Board has no intention of altering the policy which has been pursued in the past, and which has been eminently successful in the interests of shareholders, which is to work the concentrating plant to its utmost economic capacity, but not to exceed that, which would mean loss of tin. The capacity of the plant is not limited, at present, by the mill, but by the concentrating plant, that is, you can ask that plant to handle more tin than it can retain. Further, the Board has no intention of speculating in the prospects of the tin market. What is the intention of the directors re utilising reserve money? Would it not be well to purchase Rooiberg shares with some of the money?—The intention of the directors is to keep the money in the bank on fixed deposit as far as possible till it is needed for the purposes of the company. It is not customary and is contrary to the usual provision of articles of association, for a company to deal in its own shares; such procedure would be most dangerous. How many shares are held in London or outside South Africa?—I do not think it necessary to make a public statement on this point, but the share register is open for inspection to any registered shareholder. Whether it is the intention of the directors to discontinue keeping open London office?—No; even apart from the commercial necessities, it is most important that the London office be maintained for convenience of shareholders. Whether the capital expenditure will be considerably reduced in the future?—The capital expenditure to date has been amply justified by results, and the Board's policy will be always to sanction further capital expenditure which, in its opinion, will be justified by results. Why are Rooiberg shares only 28s. when a dividend of 35 per cent. is being paid?—I give it up.

The report and accounts were adopted. The election of Mr. John Munro as a director was confirmed, and Messrs. G. W. Higgins and W. McCallum were re-elected. Messrs. Alex. Aiken and Carter were reappointed as auditors. At a special meeting the following resolution was unanimously adopted: That the articles of association contained in the printed document submitted to the meeting, and for the purpose of identification subscribed by the chairman thereof, be, and the same are hereby, approved, and that such articles of association be, and they are hereby, adopted as the articles of association of the company, to the exclusion of, and in substitution for, all the existing articles thereof, other than such of the existing article which should have been contained in a memorandum of association if the company had been formed under the Companies Act, 1909.

Humphrey Pump.

The following is an official report of the proceedings at the statutory meeting, held recently, of the Humphrey Pump Company. The Chairman, Mr. Emil Mond, stated that already the company had orders in hand and in course of execution amounting to a very large sum. Mr. Herbert Humphrey, M.I.C.E., replying to a shareholder's inquiry, stated that the large installations of Humphrey pumps at Chingford had always worked without difficulty, and were at the present time working in an entirely satisfactory manner.

Manicaland Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland), for the month of September, 1913, was as follows:—Reef: Mill: Gold won (fine gold), 353 ozs. 13 dwts.; tons crushed, 1,874·5; value, £1,485 4s. 6d. Concentrates (estimated): Gold (fine gold), 21 ozs. 15 dwts. 10 grs.; tons, 4·269; value, £92 10s. 5d.; silver and lead value, £21 5s. 10d. Cyanide: Gold recovered (fine gold), 42 ozs. 0 dwts. 4 grs.; tons treated, 685.5; value, £176 8s. 1d.

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Correspondence and Discussion.

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Rathbone Ambulance Shield Competition, 1913.

To the Editor, *South African Mining Journal*.

Sir,—The competition for the Ambulance Challenge Shield, presented by Mr. E. P. Rathbone for competition amongst properly registered members of Mining Ambulance Divisions of the St. John Ambulance Brigade within the Province of the Transvaal district, will be held in Johannesburg on Sunday the 30th November next. The time and place will be notified at a later date.—Yours, etc.,

V. E. DAVIS,
District Secretary.

Johannesburg,
23rd October, 1913.

Dewar Ambulance Shield Competition, 1913.

To the Editor, *South African Mining Journal*.

Sir,—I have the honour to inform you that the first annual competition for the ambulance shield, presented by Sir Thomas Dewar for competition amongst properly registered members of Ambulance Divisions of the St. John Ambulance Brigade within the Union of South Africa, will be held in Johannesburg on Friday and Saturday, the 28th and 29th of November next. The time, place and other details of the competition will be communicated at a later date.—Yours, etc.,

V. E. DAVIS,
District Secretary.

Johannesburg,
23rd October, 1913.

Oil in South Africa.

To the Editor, *South African Mining Journal*.

Sir,—In your issue of 25th, there appears a lengthy epistle, signed "Henry Patterson," anent South African oil. I am not concerned with the remarks on Messrs. Craig and Hatch; all technical men of any prominence are subject to such comments. I would like Mr. Patterson to explain that interesting occurrence mentioned in his letter: "Where remarkably pure oils, *naturally distilled by the action of running water.*" Is this a purely local phenomenon in the Free State? As one who has had a lot to do with oil shale distillations and such like, I would be pleased if Mr. Patterson would supply some further data as to the action of running water in the distillation of oil from oil shales, etc. Will Mr. Patterson oblige?—Yours. etc.,

J. R.

Johannesburg,
29th October, 1913.

Oceana Development and Diamantfontein Shares.

Announcement is made by official circular that the Oceana Development Company, Ltd., is authorised to receive subscriptions for 9,734 unissued working capital shares in the Diamantfontein Development Syndicate, Ltd., at the par value of 10s. per share. These shares have recently come into prominence owing to the successful issue of the Roodeplaats (De Beer) Diamond Mines, Ltd., for the proving of whose property some £5,000 has been put up; while the syndicate is further interested in the alluvial diggings at Bloemhof, Klerksdorp, from which increasingly good accounts are to hand. Further afield, in the Congo, it has a substantial stake in diamond enterprise, and, generally, may be said to possess an assets-schedule having distinct attractions and potentialities. In reference to the present issue of Diamantfontein shares the circular states: "The shares offered for subscription will rank equally in every way with those now being dealt in on the London market at a substantial premium, and a special Stock Exchange settlement in these shares will be applied for immediately after allotment. The capital of the syndicate is £20,000 in 40,000 shares of 10s. each, of which 30,266 shares have already been issued. The balance of 9,734 shares are now being offered for subscription in order to provide further working capital. The syndicate owns the following rights, options, etc.:—(1) The right to prospect and work, with an option to purchase, three farms in the centre of the Bloemhof diamond fields, viz., Graspan, Pienaarsfontein and Diamantfontein. The syndicate has already recovered a number of diamonds from these farms during prospecting operations, and the farm London, immediately adjoining Pienaarsfontein, is now producing diamonds to the value of £4,000 to £5,000 monthly. (2) The right to prospect and work the surface diamondiferous gravel deposits known to exist on the property of the Vaal River Gold Fields Company. The right is subject to a royalty of 33⅓ per cent. of the value of all diamonds found, but excepts all stones recovered by the tube mill process during crushing operations. The Transvaal authorities have recently decided to throw open the Klerksdorp Commonage, on which the Vaal River Gold Fields property is situated, as a public diamond field. (3) The syndicate has recently formed its first subsidiary company, the Roodeplaats (De Beer) Diamond Mines, Ltd. The syndicate holds 20,000 fully paid up shares of £1 each. These shares will be distributed to sharerolders in the Diamantfontein Development Syndicate, Ltd., at the rate of one fully paid up Roodeplaats share for every two Diamantfontein Syndicate shares, Roodeplaats shares are now quoted at 2s. 6d. per share premium. (4) The right to prospect for diamonds over an extensive area in the Kasai district of the Congo Free State, over which a concession has been negotiated by the Oceana Development Company. The existence of diamonds in this district, as also in other parts of the Congo Free State, has been proved, as will be seen from the following extract:—"BELGIAN CONGO. FURTHER DIAMOND DISCOVERIES.—The Brussels *Journal du Congo* states that the Industrielle et Minière du Katanga (a concern commonly termed Simkat) has reported to the Katanga authorities the discovery of important diamond fields. Up to now diamonds have been discovered in five distinct parts of the Congo: in the Mutendele River, Upper Katanga, by the Tanganyika Concessions, Ltd.; in the Kundelungu Mountains, Upper Katanga, by the T.C.L.; in the Kasai district, where the Forestière et Minière has already recovered several thousands of diamonds; in the Aruwimi country, by the same Belgian-American company; and in the Upper Katanga by the Industrielle et Minière, as just reported."

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LATEST MINING NEWS.

Progress at the Shamva—The Globe and Phoenix Meeting—The Kanyemba Mine—The Big Ben—Eldorado Developments—The Lomagundi District—Hanover Syndicate's Dividend.

At the Shamva Mine there were developed at the end of June last 2,327,582 tons of an average assay value of 5 dwts. per ton, whilst there were in the stopes 165,172 tons of broken ore of an estimated average assay value of 4·31 dwts. Construction work was proceeding apace, there being 1,220 boys and 96 white men employed. The contractors were making good progress with the erection of the battery building and bins. Excavations for the tube mills were completed and foundations for the Butters' plant in, whilst all the sands plant excavation work was finished.

* * * *

The Globe and Phoenix mine has been very much in the limelight during the past year or two, and accordingly the full text of Earl Russel's speech, delivered at the annual meeting held in London on Monday, will be read on this side of the water with keen interest. According to cables from London, the chairman stated that the board proposed to reduce the next interim dividend in order to provide for capital expenditure. It was hoped in 1914 to begin the payment of reasonable interim dividends. They were waiting till the end of the year to see the proper amount available for distribution. Recent developments were most satisfactory. Eventually a readjustment of the directors' fees would be reached.

* * * *

The mill at the Kanyemba mine, Umsweswe, has been moved to a point nearer the main shaft. Crushing operations, temporarily interfered with, were resumed on the 17th ult., but the ore now being put through is not from the Kanyemba itself but from the Calton reef. In the meantime the Kanyemba ore body is being vigorously developed and the management expect continuous crushings from it on resumption, looked for to be in about a month's time.

* * * *

The owner of the Big Ben mine, near the Antenior Halt, Gwanda, has been experiencing considerable difficulties with water of late, with nothing to show for much well-sinking, etc. While waiting for the rains therefore the mill has been closed down and all work is being concentrated on development. Operations have been carried down to the 3rd level on the south ore-body, and quite a considerable tonnage has now been opened up. It is contemplated to lay down a pipe line to the Zingele at an early date.

* * * *

The following is the text of a cable despatched from the Bulawayo to the London office of the Eldorado Banket Gold Mining Co. on the 13th inst.:—" Length of pay chute No. 11 level, 120 feet; average width is 8½ feet; average value is 13·4 dwts.—J. G. McDonald."

* * * *

A *Herald* correspondent sends the following news from Lomagundi:—Further operations in connection with the May mine have been commenced on a scale that would seem to leave little doubt as to the determination of the syndicate to prove the potentialities of the property. On certain claims alluvial gold is now being secured by Messrs. Robert Dow and " Ned " Kelly. These gentlemen report that although their efforts to open up the ground to reach a production similar in bulk to that secured in other parts of Lomagundi —notably at Angwa—are of a recent date, they are very gratified with the results already attained. Mr. W. Sellar, late of the Anvil mine, is now developing his Victory claims adjacent to Banket Junction. There are rumours of other developments in mining activity here.

The total value of Southern Rhodesia's mineral output for the month of September has been officially declared at £263,505, a decrease of £23,440 as compared with the month of August. The figures for the two months read as follows:

	August.	September.
Gold	£250,576	£250,429
Silver	1,243	1,219
Lead	446	392
Chrome Iron	26,143	3,383
Coal (Sales)	6,638	5,796
Asbestos	1,427	1,759
Diamonds	472	527
Total	£286,945	£263,505

The decrease in the total is, it will be seen, to be attributed chiefly to restricted shipments of chrome iron ore, an item of the mineral production which is always subject to violent fluctuations. When compared with the longer month of August the gold value, showing as it does a decrease of only £147, must be regarded as highly satisfactory. In point of fact a new record for a thirty-day month is set up, while the increase in comparison with the corresponding month of 1912, when so much was heard of shortage of water, amounts to no less than £19,256. For the first nine months of the year an advance of £130,000 is recorded, and with the Antelope and the Bell mines perhaps declaring their first outputs before the end of the year, there is every prospect of the total gold yield for the year being in the neighbourhood of £3,000,000. The value of the monthly and annual gold outputs since January, 1911, together with the value of the other minerals recovered, have been as follows:—

	1911.	1912.	1913.
January	£207,904	£214,918	£220,776
February	203,055	209,743	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211,413	234,407	243,452
June	215,346	226,867	240,303
July	237,517	240,514	249,302
August	243,712	239,077	250,576
September	225,777	230,573	250,429
October	218,862	230,072	
November	214,040	225,957	
December	217,026	218,661	
Total Gold	£2,647,895	£2,707,367	£2,162,477
Other Minerals	242,864	257,230	180,172
Total Value	£2,890,759	£2,964,597	£2,342,649

* * * *

The directors of the Hanover Gold Mining Syndicate declared a further dividend of 20 per cent. last week. Reports from the Syndicate's property at Filabusi continue to be of a favourable character and it is understood that a somewhat enlarged output is expected as from the end of the present month when, in addition to the mill gold, a return from the newly erected cyanide plant will be declared.

" To Maintenance of Veracity, £3 8s.," is the curious item which appears in the profit and loss account of the Crescens (Matabele) Mines and Land Company. The price does not seem exorbitant.

RHODESIA'S MINERAL OUTPUT.

Details for September—Satisfactory Returns.

THE following is the official return, as supplied by the Rhodesia Chamber of Mines (incorporated) of the mineral output for the month of September, 1913:—

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
BULAWAYO DISTRICT—				
Abercorn 1. (W. J. Lane)	2	213	106·58	448
Do. (sands) . . .	—	133	47·00	197
Agincourt (H. L. Maidwell) .	5	127	81·34	342
Anchor (M. Morrison) sands .	—	330	46·96	197
Atlas (Est. R. Barkley, decd.)...	10	888	204·09	857
Do. (sands)		650	48·84	205
Bangali (Arbery & Hicks) . .	5	250	130·78	549
Do. (sands)		215	6·86	29
Big Ben (W. E. Hunt)	4	195	84·22	354
Do. (sands) .. .	—	132	56·12	236
Blanket (Forbes R. Synd., Ltd.)	15	153	35·04	147
Blue (J. Eisenhammar)	2	50	19·73	79
Bobs (Bobs Reef Syndicate)	5	300	36·52	153
Do. (sands)	—	220	7·50	32
Burton (S. H. Burns) sands .	—	700	35·90	151
Bushtick Mines, Ltd.	24 2T	6,134	179·11	752
Do. (sands)	-	3,259	720·37	3,026
Do. (slimes)		2,783	273·45	1.148
"C" (D. and C. Syndicate)	10 1C	1,461	52·16	223
Do. (sands)		1,215	155·31	652
Do. (slimes)	—	246	68·13	286
Carry (S. and G. Syndicate)	1 H	120	74·61	313
Champion H. (R. Aserman)	5	554	76·80	323
Do. (sands)		289	47·81	201
Claremont (B. L. White)	10	824	104·98	441
Clean Up (H. W. Bearcroft)	5	410	172·27	723
Colleen Bawn (Colleen Bawn Syndicate, Ltd.)	6 1P	558	68·68	288
Do. (sands)		400	67·85	285
Do. (slimes) .		454	73·92	310
Cottage (Cranleigh Syndicate) ...	2	136	51·17	215
Do. (sands)	—	180	31·49	132
Criterion Gold Mines, Ltd.	10	1,260	964·60	4,051
Do. (sands) .. .		760	95·20	400
Dam (W. H. Robinson)	2	45	24·15	101
De Kock (J. McC. McCrie)	5	100	18·04	76
Eagle A. (Macdonald & Co.)	5	348	332·94	1,398
Do. (sands)	—	128	28·30	119
Elumba A. (Cooper & Bosomworth) . .	5	540	133·06	559
Do. (sands)	—	520	100·01	420
Etoile (H. G. M. Huntley)	(5)	68	57·48	241
Farvic (H. S. Henderson) .	5	250	106·29	446
Do. (sands) . ..	—	227	26·71	112
Flora (E. E. Beecroft)	5	335	117·42	493
Fred (Transvaal and Rhod. Est., Ltd.) . .	5	507	584·42	2,455
Do. (sands) .	—	840	166·59	700
Godwin B. (Barrett & Stacey) ...	5	75	17·32	73
Golden Butterfly (Wheeler, Davis & Rintoul) . .	5	497	124·23	522
Golden Thread (T. J. Montrose)	2	200	66·72	280
Imani (E. Rochfort) .	2	191	81·07	340
Intabanenda (Est. B. Smallie, decd.)	5	90	32·65	137
I.X.L. (G. Jose) sands	—	475	29·71	125
Jumpers (J. P. McCay)	5	160	140·02	588
Do. (sands)		300	96·40	405
Kameel (New Rhod. M., Ltd.) ...	5	605	212·55	893
Koba (Koba Syndicate) sands ...	—	1,000	122·41	514
L. (J. A. Warwick)	5	254	10·57	422
Li Hang Chang (G. Leach) . ..	3	50	16·41	69
Little Beauty (T. A. Matthews) ...	3	31	48·33	203
Lone Hand (Armstrong, Furber and Alexander)	5	423	229·38	963
Do. (sands)	—	300	73·35	308
Lonely Reef G.M. Co., Ltd.	20 3T	5,920	1,380·51	5,798
Do. (slimes)	—	5,920	3,525·99	14,809
Matabele Queen's Co., Ltd.)	10	1,800	339·24	1,425
Do. (sands)	–	1,800	444·98	1,869
Do. (slimes)	–	635	69·53	292
Do. (other sources)	—	—	37·10	153
Minnie's Luck A. (C. M. Reid)	5	227	42·92	180
Monti (A. D. Hall)	5	205	60·00	252
Mtakati (H. A. Tompkins)	2	15	11·35	48
Nelly (F. D. Roscoe)	2H	824	507·45	2,131
Do. (sands)	—	360	120·82	508
New Eclipse (J. R. Stewart) ...	5	850	197·67	830
New Insimbi (P. G. Challen)	5	100	39·97	168
Old Nic (Chart. and Gen. E. and F. Co., Ltd.)	15 4P	1,925	761·55	3,199
Do. (sands)	—	1,058	157·70	662
Only (M. B. Davies)	(5)	40	12·59	53
Peach A. (C. Salomon)	5	310	602·71	2.531
Penzance (Penzance Trib. Synd.)	2	170	63·74	268
Do. (sands)	—	318	48·42	203
Planet (Huntley & Triggs)	5	535	148·09	622
Riverside (R. Martindale)	2	100	45·92	193
Do. (sands)	—	135	21·08	89
Roan (J. Robinson)	2	100	22·69	95
Rose 2W (W. A. Carter) sands...	—	510	13·50	57
Rous 1 (A. D. Hadingham)	2	89	52·80	222
Selborne (Selborne Synd.)	3	327	126·33	531
Susanna Mines, Ltd.	8	909	265·93	1,117
Do. (sands)	—	667	30·40	128
Do. (slimes)	—	293	31·61	133
Teutonic (Macdonald & Bonshor)	5	600	256·55	1,077
Tuff Nut (King's Syndicate)	5	430	103·98	437
Do. (sands)	—	320	48·14	202
Do. (slimes)	—	300	24·79	104
Winifred (Rhod. M.M. Exchange)	1 I.R.	200	269·13	1,130
Bulawayo district total			17,198·08	72,223
GWELO DISTRICT—				
Alderman (Williams & Woodger)	3	180	37·17	156
Ardpatrick (C. Maleham)	3	395	206·79	868
Bedad (A. and B. Syndicate)	10	175	16·00	68
Broad Arrow (F. Ewing)	10	175	16·09	68
Churchill (J. Jones)	6	40	14·32	60
Do. (sands)	—	140	64·81	272
Cinderella (P. Burt)	1E	200	32·60	137
Collingwood (Pini & Wearing)...	Ball mill	3	88·85	373
Csardas (Wolfshall Syndicate) ...	10	525	538·69	2,262
Do. (sands)	—	420	88·68	372
Do. (slimes)	—	105	11·13	47
Elsie (T. Pedlow)	5	60	20·60	87
Elysior (Holmes & Urquhart) ...	5	380	46·30	194
Fenella (J. Kinrade)	5	20	4·70	20
Gaika G.M. Co., Ltd.	5 1C	2,940	1,295·33	5,440
Do. (sands)	—	1,577	64·14	269
Do. (slimes)	—	1,582	109·63	461
Glenrosa No. 1 (H. G. McIntosh)	2	159	103·02	433
Do. (sands)	—	128	32·13	135
Globe and Phoenix G.M. Co., Ld.	40 10P	6,606	7,655·46	32,153
Do. (reserve gold declared) ...	—	—	1,230·56	5,168
Do. (concentrates)	—	233	744·26	3,126
Do. (slimes)	—	2,392	774·17	3,252
Gothic (Mashonaland Agcy., Ltd.)	15 2P	923	451·39	1,896
Gretna Green (M. L. Price)	5	87	68·52	288
Do. (sands)		210	32·16	135
Invulnerable (A. E. West)	5	120	23·29	98
Mask (B. Frau)	1D	17	35·41	149
Moonie River (Yellow Jacket Sd.)	5	299	104·09	437
Moss (James & Morrisby)	2	361	168·81	709
New Dunraven G.M., Ltd.	5	850	93·75	394
Do. (sands)	—	700	39·42	166
North Bonsor (Cornish Syndicate)	20	2,804	230·28	967
Do. (sands)	—	1,540	119·62	502
Pompei (Pharos Syndicate)	2	40	9·54	40
Pretty Polly (New Rhod. Reduc. Co., Ltd.) O.S.	—	—	7·82	32
Rambler (G. G. Grant)	2	16	5·05	21
Red Hill Dev. Syndicate, Ltd. .	1C	2,906	93·20	391
Do. (sands)	—	1,103	123·39	518
Selukwe Columbia G.M., Ltd. ...	1C 3P	1,700	545·13	2,290
Do. (concentrates)	—	195	183·01	769
Do. (sands)	—	1,282	191·03	802
Do. (slimes)	-	454	[illegible]	335
Shamrock (Crampin & Masters)...	10	1,605	154·54	649
South Bonsor (Ideal Syndicate) ...	10	450	47·41	199
Do. (sands)		460	27·34	115
Stator (P. Johns)	2	12	3·61	15
Tebekwe (A. N. Tyrrell)	15	1,661	174·05	731
Tebekwe 1 (A. N. Tyrrell)	(5)	157	58·32	245
Twin Nugget (Bogwold & Cannell)	2	25	9·66	41
Veracity (J. Fischer) slimes	—	390	38·90	163
Wanderer (Selukwe) G.M., Ltd.	4GR	11,904	1,290·03	5,418
Welcome Back (F. C. Luxat)	2	360	169·00	710
Gwelo district total			17,794·09	74,734

Matabeleland total .... 34,992·17 ozs.

Value £146,957

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT—				
Acorn Gold Mines, Ltd.	5	405	98·28	413
Do. (sands)	—	240	54·31	228

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Agnes (P. S. Triggs)	5	500	101·41	426
Alabama (Rix & Reynolds)	(3)	235	272·67	1,145
Amaroso South (C. H. Weildon) (sands)	—	139	13·90	58
Auriga (Hartley Pioneer Synd.)	5	160	35·16	148
Banshee (P. S. Triggs)	2	40	48·39	203
Battlefields (Rhodesia), Ltd. (Minaar & McArthur)	2C	1,815	172·87	726
Do. (sands)	—	1,452	105·42	443
Do. (slimes)	—	363		
Black Chief (S. McIntyre)	3	52	9·63	40
Blue Rock (Blue Rock Synd.)	2	250	69·75	293
Do. (sands)	—	175	30·65	129
Brilliant (Mabel's Luck Synd.)	7	940	272·54	1,145
Do. (sands)	—	384	106·49	447
Buckwal 1 (E. H. Walsh) sands	—	157	9·80	41
Buller (J. Laing)	5	1,170	87·21	366
Do. (sands)	—	780	47·56	200
Chadshunt (C. H. Wheildon)	5	115	111·94	470
Cheshire Cat (Tavaner, Arnold & Windley)	5 1P	766	310·94	1.306
Do. (sands)	—	493	79·40	333
Do. (slimes)	—	273		
Companion (C. H. Wheildon)	5	30	43·01	181
Do. (sands)	—	91	49·49	208
Concession and W. Extension (C. E. Simpson)	5 1C 2P	2,015	440·11	1 848
Do. (sands)	—	1,870	120·79	507
Dalny (Macdonald & Sale)	5	834	56·95	239
Dalny 1W. (Shagari Mines, Ltd.)	5	480	90·23	379
Do. (sands)	—	270	48·97	206
Dolly 1 (C. Fallon)	5	210	60·42	254
Dreadnought (W. E. Masters)	1 C	241	63·03	265
Eiffel Blue and E. Extension (Willoughbys)	10	1,624	522·84	2,196
Do. (sands)	—	918	74·67	314
Enney Extension (Ellsmoor and Goodyer)	5	310	77·61	326
George (Heroine G.M. Co., Ltd.)	10	866	63·64	267
Giant Mines of Rhodesia, Ltd.	30 2T	10,851	2,471·49	10,483
Glasgow Mines, Ltd.	5	226	109·68	461
Do. (sands)	—	252	46·67	196
Glencairn No. 3 (Glenrosa Synd.)	4	352	233·41	980
Do. (sands)	—	207	17·25	73
Globe (E. J. Davies) sands	—	200	19·46	82
Golden Glade (J. H. E. Worrall) sands	—	43	9·65	41
Golden Valley (J. Mack)	10	745	226·39	951
Do. (sands)	—	525	111·23	467
Goodenuf (Hartley Pioneer Syndicate) clean up	—	—	5·68	24
Inez (Harill & Smith)	10	450	162·44	682
Do. (sands)	—	400	88·87	373
Juno (H. R. Nicholl)	5	531	197·46	829
Do. (sands)	—	285	48·86	205
Mali East (McAdams & Purves)	2	60	5·79	24
Midwinter (Midwinter Syndicate)	2	136	28·15	118
New Union Jack (S. A. Beach sands	—	—	1·60	7
Oleander G.M. Co., Ltd.	3	304	47·88	201
Do. (sands)	—	119	95·81	402
Do. (slimes)	—	185		
Orcus 17 (V. Forster)	1 D	1	8·23	35
Owl (A. Rolfe)	10	1,273	500·61	2,103
Do. (sands)	—	995	128·22	578
Peacock (Wellington Mines, Ltd.)	(5)	356	103·26	434
Pickstone Gold Mines, Ltd.	10 1C	1,294	693·52	2.913
Do. (sands)		720	337·25	1,416
Pomposo (J. Knot)	5	320	176·35	741
Rhino (H. W. Joslin) sands	—	26	5·70	24
Rosaline A. (J. F. Meade)	5	60	33·20	139
Seigneury (N. A. Arnold and Cen. Min. & Inv. Cor., Ltd.)	5	440	174·89	734
Do. (sands)		322	28·29	119
Shepherds (Phoenician (Rhod.) Co., Ltd.)	5 1T	1.060	332·95	1,398
Do. (sands)	—	1,040	132·16	555
Sid (Sebakwe and District Mines, Ltd.)	5	552	287·63	1,208
Do. (sands)	—	350	51·70	217
St. John del Rey (C. G. Downie)	5	672	108·50	456
Tea (Homan Synd., Ltd., and Cen. Min. and Inv. Co., Ltd.)	5	870	248·29	1,043
Do. (sands)		494	92·42	386
Thistle-Etna G.M., Ltd.	1C	3,032	827·04	3.474
Do. (sands)	—	2,547	296·29	1,244
Do. (slimes)		712	87·66	368
Try Me 2 (R. R. Aitkin)	5	320	99·95	420
Do. (sands)		400	53·39	224
Warthog (Kelsall & Davidson)	5	155	34·89	147
Do. (sands)		300	18·22	77
Washington (I. J. Minaar)	5	390	261·77	1.099
Do. (sand)		320	40·75	171
What Cheer D.B. (H. Moser)	5	1.250	113·35	475
Hartley district total			13,087·70	55,068

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value £
LOMAGUNDI DISTRICT—				
Alluvial (J. Gouch)	—		12·55	53
Do. (E. W. Young)	—	—	19·12	80
Anglian (Stone & Standen)	2	250	88·06	370
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	7,641	2,351·32	9,974
Do. (sands)	—	7,613	530·89	2,252
Linnett (A. R. Morkel)	2	720	116·06	487
Lone Hill (F. B. Platt)	2	70	15·25	64
Lomagundi district total			3,133·25	13,280
MAZOE DISTRICT.—				
Botha H. (B. G. Byerley)	5	982	70·99	298
Goth B. (Goth Syndicate) sands	—	600	16·93	71
Honest (G. Brown)	3	102	50·30	211
Hope (Hope Tailings Syd.) sands	—	647	57·02	240
Jumbo G.M. Co., Ltd.	30	3,200	540·68	2.298
Do. (sands)	—	1,950	465·22	1,977
Do. (slimes)	-	1,250	158·41	673
Kimberley (Mash.) G.M. Co., Ltd.	6 2T	2,150	688·61	2,923
Do. (sands)	—	1.000	136·26	575
Do. (slimes)	—	1,950	76·81	324
Micky (Micky Syndicate)	2	298	225·39	947
Mitre 8 (Bishop's Syndicate)	1D	11	17·91	75
Oceola G.M. Co., Ltd.	5	550	179·91	756
Do. (sands)	—	300	42·32	178
Pompey A. (Violet Syndicate)	5	337	298·42	1,253
Puff Adder (Puff Adder Synd.)	2	31	17·52	74
Xmas 1 N.W. (Pearce Laland Syndicate)	2	220	67·69	284
Mazoe district total			3,110·42	13,157
SALISBURY DISTRICT.—				
Arab (Arab Syndicate)	1 D	18	29·76	125
Arcturus (L. Chiappini) sands	—	300	36·08	151
Hopefield (Hopefield Syndicate)	2	25	5·54	23
Do. (sands)	—	—	21·04	88
Inyague 3 (P. L. Peters)	2	100	42·90	180
Joker (W. C. Harrison)	2	152	206·13	866
Louise Grand (H. S. Plant)	1H	919	109·28	459
Do. (sands)	-	919	103·26	434
Mont d'Or (Claxton & Bussell)	2	230	68·47	288
New Full Back G.M. Synd., Ltd.	2	264	61·06	256
Old Loyalty (Shamva Ilex G.M. Co., Ltd.)	5	147	40·04	168
Do. (sands)	—	223	38·04	160
Salisbury district total			761·60	3,198
UMTALI DISTRICT.—				
Arthur (M. A. Hoole)	5	102	18·12	76
Cairndhu 2 W (E. K. Evans) sands	—	150	13·85	58
Champion (J. Buchanan)	5	728	102·29	430
Do. (tailings)	—	527	143·58	603
Do. (slimes)	—	165		
Elgin (Umtali Waterfall Synd.)	10	592	194·59	817
Do (sands)	—	526	76·94	323
Do. (slimes)	—	349		
Kent (E. Evans)	5	350	150·70	633
Do. (sands)	--	350	48·00	202
King's Daughter D.B. (Umtali Waterfall Synd.) slimes	-	992	139·33	585
Liverpool 38 (R. G. Snodgrass)	5	520	57·47	241
Do. (concentrates)	-	1	74·45	307
Do. (sands)	–	220	18·24	77
Pilgrim 2 E (J. Meikle)	5	605	142·61	599
Quagga (Quagga Syndicate)	5	823	127·87	537
Rezende Mines, Ltd.	105	16,562	1,847·00	7.837
Do. (concentrates)	- -	137	510·05	2.133
Do. (sands)	- -	2,762	374·13	1.587
Two Sisters (F. E. Markham)	2	140	48·65	204
Umtali district total			4,087·87	17,249
VICTORIA DISTRICT.—				
Kia Ora (Pickering & Shanahan)	3	20	5·97	25
Texas (G. Scott)	10	1.030	263·01	1,105
Do. (sands)	—	650	92·88	390
Victoria district total			361·86	1.520

Mashonaland total . . . 24.542·70 ozs.
Value . . . £103.472.
Grand total gold output . . . 59,534·87 ozs.
Value . . . £250,429.

SUMMARY.

Gold—	*Ozs.*	*Value.*
Matabeleland	34,992·17	£146.957
Mashonaland	24.542·70	103,472
Total	59,534·87	£250,429
Silver, ozs.	11,540·98	1,219
Lead, tons	22·94	392
Chrome iron, tons	1,515·60	3,383
Asbestos, tons	97·72	1,759
Diamonds, carats	95·00	527
Coal, tons (sales)	18.818·00	5,796
Total value August output		£263,505

SEPTEMBER GRADE, COSTS AND PROFITS.

Chamber of Mines' Analysis.

THE following tabulation of the operations of the mines of the Transvaal contributing to the gold production is supplementary to the details published by the Chamber of Mines in its declaration on the 10th of the month:—

THE WITWATERSRAND.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled	
	£	s.	d.	s.	d.	£	£	s.	d
1. Aurora West United ..	19,323	27	0	19	0	13.521	5.757	8	0
2. Bantjes Consolidated ...	24,488	24	11	23	7	23,117	1,046	1	1
3. Brakpan Mines . . .	66.609	27	4	19	0	45,814	20,202	8	4
4. City Deep .	68,788	37	6	25	8	46,168	20.599	11	5
5. City and Suburban .	48,148	38	8	22	3	27,348	20.156	16	4
6. Cons. Langlaagte	58,194	27	1	16	11	36,020	22,176	10	5
7. Cons. Main Reef	34,181	32	2	21	6	22.634	11.077	10	6
8. Crown Mines .	256,962	29	0	15	9	138,979	115.154	13	0
9. Durban Roodepoort ...	14,871	21	6	15	8	10,855	4,018	5	10
10. Durban Rood. Deep ..	32,053	30	5	26	6	27.961	3.626	3	5
11. East Rand Proprietary.	222,764	31	8	19	11	134,762	76.894	11	5
12. Ferreira Deep	102,086	39	9	19	6	50,742	50.149	19	3
13. Geduld Proprietary . .	29.433	28	10	23	2	23,241	6.100	6	1
14. Geldenhuis Deep	70,088	29	10	24	10	58,338	10,992	4	8
15. Ginsberg . .	20.907	27	9	19	4	14,529	6.376	8	6
16. Glencairn Main Reef ...	14,803	15	5	13	0	11,776	3.026	3	4
17. Jupiter . .	28,192	20	4	14	2	19,659	8.244	5	11
18. Knight Central	24,943	24	1	21	3	21,907	2.717	2	8
19. Knights Deep	74,328	15	2	11	1	54,426	15,812	3	3
20. Langlaagte Estate	51.992	18	3	16	0	42,637	11,215	4	5
21. Luipaardsvlei Estate ...	17,947	21	0	18	5	15,626	2.116	2	6
22. Main Reef West .	25.571	30	11	24	6	20,043	5,131	6	3
23. May Consolidated	11,834	15	7	11	7	8,772	3.031	4	0
24. Meyer and Charlton ...	34,683	47	6	17	11	13.098	21,432	29	4
25. Modderfontein B. .	74.939	42	3	15	9	27,957	46,124	26	0
26. New Goch	25,826	19	3	16	3	21,809	4,015	3	0
27. New Heriot	23.418	36	7	21	11	13,829	9,326	14	10
28. New Kleinfontein	66.893	26	9	17	2	43,001	23,139	9	3
29. New Modderfontein	74.701	42	6	19	2	33,633	40,278	22	11
30. New Primrose	33,544	27	3	13	2	15,924	17.621	14	7
31. New Rietfontein	15.585	20	6	19	9	14.986	598	0	9
32. New Unified	15.453	24	8	17	0	10,399	5,054	8	3
33. Nourse Mines	69.331	30	4	21	11	50,120	18,443	8	1
34. Princess Estate	26.824	24	11	23	11	25,710	1,044	1	0
35. Randfontein Central ...	254,473	25	8	17	8	173.507	78,456	8	0
36. Robinson	104.762	40	0	14	6	37,726	65.318	25	1
37. Robinson Deep	69.586	28	8	17	6	42.378	27.385	11	4
38. Roodepoort United	22.390	18	11	17	6	20,762	1,610	1	4
39. Rose Deep	69.306	25	3	17	8	48,010	20.267	7	6
40. Simmer and Jack	67,182	21	4	12	9	40,082	27,239	8	8
41. Simmer Deep	45,786	16	10	15	7	42,369	2,899	1	1
42. Spes Bona Tribute†	4.842	18	4			—			
43. Van Ryn .	51.274	28	1	15	6	28.269	23.025.	12	7
44. Van Ryn Deep	51.087	32	5	20	0	31.453	19,632	12	6
45. Village Deep	59.800	31	7	22	2	42.034	17.071	9	0
46. Village Main Reef ...	64,676	35	11	18	4	32,613	30,529	17	2
47. Vogelstruis Estate... ...	14.255	20	11	19	3	12.601	1,686	2	7
48. West Rand Central ...	4,044	36	10	29	9	3,267	777	7	0
49. West Rand Cons.... ...	34,479	27	5	21	11	26,996	7,359	6	0
50. Witwatersrand	45,098	24	8	14	3	25.137	19,961	11	4
51. Wit. Deep	69,153	29	11	16	4	37,735	30,709	13	4
52. Wolhuter	43,425	29	1	18	3	27,285	15,611	10	5
Miscellaneous producers	17.981	—		—		—	—	—	
Witwatersrand totals ...	2,873,211	27	9	17	10	1811597	1002228	9	10
†Private.				51 cos.		51 cos.	51 cos.	51 cos	

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by-products.

OUTSIDE DISTRICTS

	Total value recovered	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled	
	£	s.	d.	s.	d.	£	£	s	d
HEIDELBERG—									
1. Nigel	19,816	29	6	24	0	15,589	4,003	6	2
2. Sub Nigel	8,653	38	1	29	10	6,776	1,780	7	10
BARBERTON—									
3. Barrett	1,398	10	3	—		—	—	—	
4. Sheba	13,741	43	6	30	7	9,667	4,080	12	11
5. Worcester	4,974	17	2	12	5	3,600	1,351	4	8
KLERKSDORP—									
6. Quest	3,216	15	5	12	7	2,625	588	2	10
LYDENBURG—									
7. Ceylon Lydenburg	845	26	9	21	5	676	169	5	4
8. Glynn's Lydenburg	8.266	44	5	19	4	3.613	4.629	24	10
9. Transvaal G.M. Estates	34.581	58	9	23	4	13,740	20,452	34	9
Miscellaneous producers	30,985	—		—		—	—	—	
Total (outside districts)	126,475	36	0	22	6	56,281	37,052	14	10
				8 cos		8 cos.	8 cos.	8 cos.	
Grand totals	2999686	28	0	18	0	1867878	1039280	10	0
				59 cos.		59 cos.	59 cos.	59 cos.	

A comparison of value recovered per ton milled, working costs and profits per ton with August shows that the value recovered on the Witwatersrand for September was 27s. 9d., or 8d. per ton more than for August. Working costs in September were 17s 10d.; in August 17s 7d.; in July 19s. 4d.; in June 17s. 8d.; in May 17s. 7d.; in April 17s. 11d.; in March 17s. 8d.; in February 18s. 3d.; and for both January and December 18s.

For January the tonnage milled was 2,296,948 tons; for February, 2.100,137 tons; for March, 2,321,254 tons; for April, 2,301,099 tons; for May, 2,366.726 tons; for June, 2,177,354 tons; for July, 1,873,980 tons; for August, 2,162,807 tons; and now for September, 2,035,318 tons. In the outside districts the total tonnage milled was 52,663, making a total for the Transvaal of 2,087,981 tons.

The total dividends declared for 1913 to date are: Witwatersrand, £4,516,388; outside, £336,437; total, £4,852,825.

Testing the Safety of Wire Ropes.

Exhaustive experiments regarding power of resistance and life of various kinds of wire ropes, as well as practical methods of testing them, have recently been conducted at the laboratory for lifting machinery attached to the Karlsruhe Technical Academy, and are fully described by Messrs. Benoit and Wörnle in *Glükauf* 1913, No. 34.

The over-production of German diamonds is causing considerable apprehension. It is estimated that Damaraland's total output for 1913 will be one million and a half carats, or 50 per cent. above the output for 1912. Many carats will have to be locked up, and thus there will be a big accumulation when the present contract expires, unless in the meanwhile a big demand for the Damaraland class of stones arises.

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Finance, Commerce, and Industries.

Rhodesian Railway Rates.

At the last meeting of the Bulawayo Chamber of Commerce a letter was read from the Acting General Manager of the B. & M. & R. Railways in the following terms:—"I beg to inform you that it is shortly proposed to revise the port rates to stations north of Bulawayo by adopting a tapering scale of rates from the ports to stations on the Bulawayo-Broken Hill section. This revision will have the effect of reducing the port rates to stations situated between Bulawayo and the Congo border. Re-forwarded rates will be arranged from Bulawayo and Livingstone to stations northwards, in the same way as those now in operation from Salisbury and other places, quoted on page 44 of Tariff Book."

* * * *

Tobacco.

A valuable article on the production of cigar-wrapper tobacco is published in the last issue of the *Agricultural Journal*, from the pen of Mr. W. B. Wilson, the officer in charge of the Tobacco and Cotton Division's Experiment Station at Barberton. Mr. Wilson states that cigar-wrapper tobacco can be grown in the Barberton district, and that Sumatra is the most suitable variety so far tried. Where such leaf can be grown, it should be a very paying proposition. Seed-beds must be burned to secure plants free from root gall-worm; and the tobacco should not be planted on sour land, new land, or land badly infected with the worm. Much more work is needed to determine such points as the relative values of shade-grown and sun-grown tobacco, the kind of fertilisers to apply to secure the desired results, the best varieties of wrapper tobacco, and the production of a good filler tobacco on untried soil or with new varieties; whilst the best way to control certain insect pests, including the nematode, or root gallworm, also calls for a good deal of investigation.

* * * *

Dynamite on the Farm.

Some of the effects of the various practical demonstrations in subsoiling with dynamite, that were carried out last year, are now beginning to be seen, and favourable reports are coming in from all parts. As an example, it may be stated that experiments were carried on at Mr. J. G. Currey's farm, The Kloof, in the Cradock district, in August, 1912. These experiments included subsoiling growing lucerne, and several people who witnessed this operation foretold the destruction of the roots from blasting. The crops yielded in the dynamited beds have, on the contrary, shown a remarkable improvement in consequence of the treatment; and Mr. Currey strongly advises anyone who has similar Karroo soil to adopt the use of subsoil dynamite. This gentleman also reports that brak ground, in which he failed to establish lucerne on three or more occasions (though he had put down barley before), after being thoroughly dynamited, is now yielding satisfactory crops, only two small beds having proved indifferent.

Trade Disputes.

A Board of Trade Blue Book, issued recently, shows that 219 settlements respecting the rates of wages, hours of labour and other conditions of service of men employed on railways of Great Britain were effected during last year under the revised Railway Conciliation scheme, as amended by the agreement arrived at on 11th December, 1911, at a conference of representatives of the railway companies and the railwaymen's unions. One hundred and seven settlements were arrived at by agreement between deputations and the companies, 93 being by agreement between the two sides of Conciliation Boards, without the assistance of a Chairman, and four by such agreement with the mediation of a Chairman, while in only fifteen cases a Chairman's decision was required. The Blue Book gives accounts of the changes that were made under the operations of the new schemes.

* * * *

The Sugar Industry.

A new sugar mill, capable of turning out 15,000 tons of sugar, is about to be erected in the area of the Umfolozi Settlement. The land being Government land, the right to build had to be obtained from the Lands Department. It is anticipated that the return for the capital embarked will be found in the practical monopoly of the cane supplies from the district; as the surrounding settlers would not find it an economic proposition to send their supplies to any remoter mill. The permit for the Umfolozi mill has been obtained by Mr. Maxwell. This is the third mill in the Zululand sugar settlements to be built under the conditions above described.

ADVERTISER seeks situation on Reduction Work on small property in outside district. Amalgamating, Cyaniding, Smelting, etc. Can undertake all erecting work on small plant. Experienced with Suction Gas Plants—running and erecting.—Reply "Extraction," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

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THE WEEK IN THE SHAREMARKET.

Firmer, with Better Tendency—Diamonds Inactive.

Quietness continues to reign over the Stock Exchange, and business is of the most meagre description. A good market is freely predicted for Christmas, but in the meantime brokers are making little or no commission. Rand stocks are all in the doldrums, with tin and diamonds little better. Among the last-named, Pilandsbergs are the only feature, reports from the mine being that 25 carats per 100 loads are being found. The week's fluctuations are few as will be seen below:—

	Friday, 24th.	Sat., 25th.	Mon., 27th.	Tues., 28th.	Wed., 29th.	Thurs., 30th.
Adair Ushers ..	0 3B	—	—	—	0 3B	0 3B
African Farms ..	14 6	14 6	14 4B	14 6B	14 6B	14 6B
Apex Mines ..	18 3B	17 9B	19 0s	17 3B	17 0B	—
Bantjes Consolidated	13 0B	13 0B	13 0B	13 0B	12 6B	13 6
Benoni Consolidated	2 0B	2 0B	2 6s	2 0B	2 0B	2 0B
Brakpan Mines ..	52 6B	52 6B	—	53 6B	53 9B	53 9B
Breyten Collieries	—	26 3B	26 3B	26 3B	—	30 0s
British S.A. ..	20 6B	20 6B	20 6B	—	21 0B	—
Bushveld Tins ..	0 8B	—	0 8B	0 8B	0 9	0 9s
Cinderella Cons. ..	—	6 3B	—	6 3B	6 3B	—
City & Subs. (£4) ..	46 0B	46 0B	47 0B	46 9B	46 9B	46 6B
City Deeps ..	54 0B	54 0B	54 0B	54 6B	54 9B	54 9B
Cloverfield Mines ..	4 1B	4 3	4 1B	4 1	4 1B	4 0B
Clydesdale Colls. ..	9 0B	—	8 6B	9 0B	—	—
Cons. Langlaagtes	25 0B	25 0B	25 0B	25 0B	25 0B	25 6B
Cons. Main Reefs ..	16 3	16 3	16 0B	16 0B	16 6B	16 9
Cons. Mine Select	8 6B	—	8 6B	—	8 6B	8 6B
Coronation Colls. ..	—	—	—	11 6B	—	11 6B
Coronation Freeholds	0 5B	0 5B	0 5B	0 5B	0 5B	0 5B
Crown Diamonds ..	7 0B	8 0	—	7 10B	7 10B	7 9B
East Rand Centrals	8 0B	8 0B	8 0B	8 6	8 1B	8 0B
East Rand Coals (2/6)	1 9	1 9B	1 9B	1 9B	1 9B	1 9B
East Rand Deeps ..	—	—	1 3B	1 3B	1 3B	1 6s
East Rand Props.	43 0B	43 0B	43 0B	43 6B	43 6B	43 6B
East Rand Debs. ..	—	£90s	£85B	£87½B	—	—
Eastern Golds (1/-)	1 2B	1 2B	1 0B	1 2B	1 2B	1 3s
Frank Smith Diam.	7 9B	8 0	7 9B	7 7B	7 8B	7 3
Geduld Props. ..	21 6B	21 6B	21 3B	21 3B	21 3B	21 6
General Minings ..	—	—	—	10 6B	—	—
Glencairns	—	3 3s	—	2 0B	2 0B	2 0B
Glencoe (Natal) Colls.	7 0B	7 0B	7 0B	—	—	—
Glynn's Lydenburgs	—	15 6s	15 6s	—	—	14 6B
Government Areas	19 3B	19 3B	19 3	18 9B	18 6B	18 6B
Jumpers	3 0B	—	3 0B	—	—	—
Jupiters	3 6B	3 3B	3 6B	3 6B	3 3B	3 6B
Kaalfontein D. (2/6)	0 4B	0 4	0 3B	0 3B	0 6s	0 3B
Klerksdorp Props.	2 2	2 2B	2 2B	2 0B	2 0B	2 1B
Knight Centrals ..	6 4	6 6	6 3B	6 4	6 4B	6 4
Knights Deep ..	35 6s	—	—	—	—	—
Lace Props. ..	2 7B	2 7B	2 6B	—	2 6B	2 6B
Luipaardsvlei Est.	—	7 6B	—	7 6B	7 6B	7 6B
Lydenburg Gold Fms.	2 10B	2 10B	2 10B	—	2 10B	2 10B
Main Reef Wests ..	8 0s	—	8 9s	—	7 0B	7 0B
Meyer & Charltons	—	—	—	—	102 6s	—
Middlevlei Estates		0 10B	1 0s	0 10B	0 9B	0 10
Modder B's.. ..	77 0B	77 0B	77 0B	77 0B	77 6B	77 0B
Modder Deeps ..	32 0	32 0B	32 3	32 3B	32 6	32 3B
Natal Navigation Col.	—	—	14 0B	—	14 6B	14 0B
New Boksburgs ..	—	—	—	—	—	0 7s
New Eland Diam...	26 0B	25 0B	29 0	30 0	—	29 0B
New Era Cons. (5/-)	5 6B	5 3B	5 0B	5 6B	—	—
New Geduld Deeps	2 0B	—	2 0B	2 0B	2 0B	2 0B
New Heriots ..	—	59 0B	—	—	—	—
New Kleinfonteins	—	22 6B	23 0*	22 6B	22 6B	22 6B
New Modders ..	—	225 0B	225 0B	220 0B	226 3B	225 0B
New Rietfonteins ..	4 0s	—	—	3 3B	2 0B	—
New Unifieds ..	—	—	12 0B	12 0B	—	—
O.F.S. & Trans. Dia.	1 9B	1 9B	1 9B	1 8B	1 8B	1 8B
Piggs Peak ..	9 0B	9 0B	—	9 0B	—	—
Premiers Def. (2/6)	200 0B	—	—	—	—	—
Pretoria Cement Co.	—	45 0s	—	45 0s	44 0B	44 0B
Princess	4 6B	4 6B	4 6B	4 6B	4 6B	4 6B
Rand Collieries ..	2 0s	—	—	—	—	—
Rand Klips ..	1 9B	1 11B	1 11	—	—	1 9B
Rand Nucleus ..	1 7B	1 8B	—	—	1 9s	1 7B
Randfontein Estates	25 6B	25 0B	25 6B	—	25 6B	25 9B
Roberts Victors ..	31 3s	30 0s	—	—	30 0s	30 0s
Robinson Deeps ..	—	29 0B	28 9B	29 0B	29 0B	30 0B
Rooiberg Minerals	29 0B	30 0	29 6B	29 6B	29 9	29 6B
Rood. Durban Deeps	19 0B	19 0B	19 0B	—	19 0B	19 0B
Ryan Nigels ..	3 0B	—	3 0B	3 0B	3 0B	3 0B
Shebas	4 9B	—	—	—	—	—
Simmer Deeps ..	1 0B	1 0B	1 0B	1 0B	1 0B	1 0B
S.A. Breweries ..	40 0B	—	40 0B	—	—	41 0B
Steyn Estate ..	13 6s	13 6s	—	—	—	—
S.A. Diamonds ..	30 0B	30 0B	30 0B	30 0B	30 0B	30 0B
S.A. Lands ..	3 2B	3 2	3 2B	3 2	3 2B	3 2B
Springs Mines ..	13 6B	13 0B	13 0B	11 6B	13 0s	12 9s
Sub-Nigels	8 6B	8 6B	8 6B	8 6	8 6B	8 9B
Swaziland Tins ..	—	42 6B	—	—	—	43 0B
Trans. Coal Trusts	31 0B	31 3B	31 3B	31 3B	31 3B	31 6B
Trans. Cons. Lands	—	—	21 3B	21 0B	—	—
Van Ryn Deeps ..	35 0B	35 0B	35 0B	35 0	35 6	35 3B
Village Deeps ..	37 0s	36 6s	—	34 6	—	—
Vogel. Cons. Deeps	—	1 0s	—	—	—	0 6B
West Rand Cons. ..	—	9 0B	—	—	—	—
West Rand Estates	—	—	—	2 6s	—	3 0s
Witbank Collieries	41 0B	—	40 0B	42 0B	42 6B	42 0B
Witwatersrands ..	69 0B	69 0B	69 0B	—	68 0B	68 9B
Wit Deeps ..	57 6B	57 9B	57 6B	57 6B	57 6B	58 3
Wolhuters	13 9	13 6B	13 6	13 3B	14 0B	13 9B
Zaaiplaats Tins ..	36 3B	35 9B	36 0B	36 0B	36 0B	35 9B

B Buyers. s Sellers. * Ex London.

A New Machine to Polish Diamonds.

The invention of a machine to polish diamonds has created considerable sensation in Amsterdam and Antwerp, fears being entertained that it will mean unemployment for a number of polishers and may also revolutionise the cost of production. The machine is still, however, in the experimental stage, but the cutting trade views the invention seriously.

Swaziland Tin.

The following are the particulars in regard to operations for the month of September, 1913:—Concentrates recovered, 21·983 long tons; estimated profit (taking the price of tin at £180 per ton), £685; adjustments in respect of previous shipments due to fluctuations in the price of tin, to be added, £210; profit for the month, £896. Water supply was inadequate and working conditions abnormal. There has been fair rainfall during October, improving supply in hill creeks. Labour is scarce.

Reuter is authorised to say there is no foundation for the statement published in the *Birmingham Daily Post* that in despatches to the Colonial Office the Governor-General of South Africa has made recommendations to the Imperial Government upon industrial questions in South Africa, or for the further statement that His Excellency contemplates a visit to England.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Italian Lyric Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

INVESTORS' DIARY.

The following company meetings have been announced:—

Oct. 27.—Johannesburg Consolidated Investment Company.
Oct. 29.—Rooiberg Minerals.
Oct. 31.—Knights Deep.
Nov. 5.—New Boksburg Gold Mines.
Nov. 11.—Jumpers G.M. Company.
Nov. 25.—Zaaiplaats Tin Company.
Nov. 25.—Transvaal and Delagoa Bay Investment Co.
Nov. 28.—Consolidated Main Reef Mines and Estate; Main Reef West.

Engineering Notes and News.

Rating of Electrical Machinery.

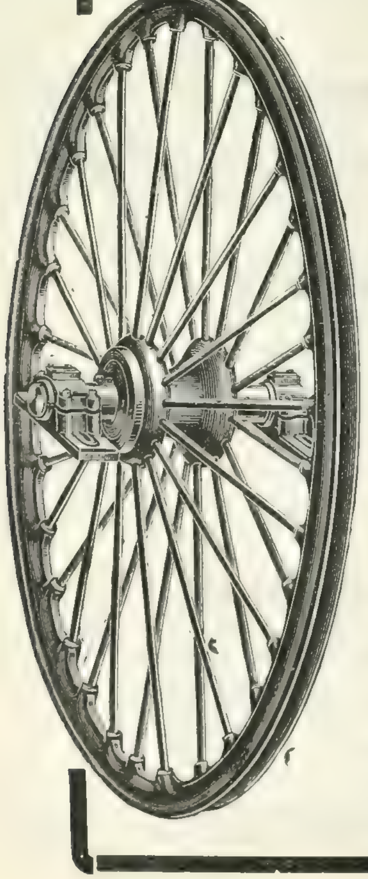
In a circular just issued by the International Electrotechnical Commission it is explained that, as some considerable time is likely to elapse before the official report is published, they are issuing this interim report containing the salient points in regard to the temperature limits adopted at Berlin, this being one of the most important matters so far discussed by the Commission. It has already been announced that the permissible limits of observable temperatures recommended at Zurich in January of this year were adopted with only a few slight modifications. The Zurich meeting agreed upon the figure of 90 deg. C. as the highest observable limit for impregnated cotton, and recommended 30 deg. C. as the cooling air temperature, but made no definite pronouncement in regard to the extremely important point of temperature rise. Probably 25 deg. C. to 30 deg. C. well represents the average cooling condition ordinarily met with in practice, but it is known that the cooling air temperature at times rises considerably above this average value, and cooling air temperatures between 35 deg. C. and 40 deg. C. are by no means unusual. It has now been agreed that, instead of an *average* cooling air temperature, the *maximum* probable temperature is to be given. Whilst, at Berlin, the majority were in favour of adopting 40 deg. C. as representing the worst probable cooling conditions under which a standard machine might be required to operate in temperate climates, two or three favoured 35 deg. C.; with a view, however, of arriving at a unanimous agreement, this point, as already mentioned, was wisely referred back to the National Committees for further consideration. Under the conditions of maximum cooling air temperature, the permissible limits of observable temperatures specified for various insulating temperatures must never be exceeded, and the values adopted at Berlin and given in the appended table represent the carefully-considered opinion of the International Electrotechnical Commission, and are put forward as approved practice for *continuous* running. The values are to apply only to windings for rotating machinery, the terminal pressures of which do not exceed 4,000 volts, and to dry transformers with solidly impregnated coils up to 10,000 volts. The question of temperature limits for oil-immersed transformers has been deferred for future consideration. The International Electrotechnical Commission understand that experimental evidence justifies the assumption that, in the above-mentioned windings to which the limits are to apply, the hottest internal spots will not be more than 10 deg. C. in excess of the highest temperatures observable by the methods of measurement recommended by the International Electrotechnical Commission, and of which details will be given in the official report. It is to be noted that the observable temperature limits permissible in windings for higher pressures than those stated above will be less than indicated in the table, so that the same temperature limits at the hottest internal spot shall not be exceeded. Thus, for heavier insulations it will evidently be necessary to allow for a greater difference between the temperature at the hottest internal spot and the highest observable temperature, and, doubtless, specific figures to cover such cases will be recommended by the Commission later on.

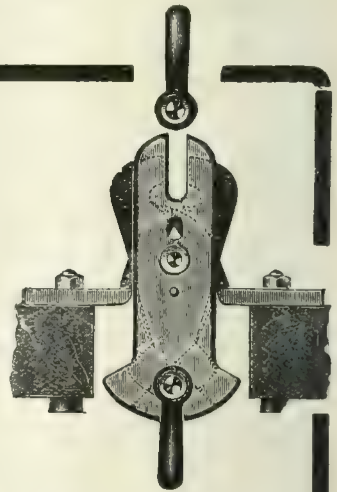
Limits of Observable Temperature adopted by the I.E.C. in Sept., 1913.

	Deg. Cent.
Non impregnated cotton	80
Impregnated cotton or paper—general	90
Do. do. single layer field coils, stationary or moving	95
Do. do. stationary coils solidly impregnated throughout	95
Do. do. rotor and stator windings having the slot portion solidly impregnated or moulded...	95
Enamelled wire (without cotton)	105
Mica, micanite, asbestos—general	115
Do. do. single layer field coils, stationary or moving	120
Do. do. stationary coils solidly impregnated or moulded	120
Windings permanently short-circuited—	
Insulated	100
Non-insulated	110
Commutators—slip-rings	90
Bearings	80

Solomon's Temple Tins.

In the matter of the Solomon's Temple Tin Mines, Ltd. (in liquidation), notice is given that the meetings of creditors and contributories advertised in the *Union Gazette* of the 10th October, 1913, to be held before the Assistant Resident Magistrate (Civil Division), Johannesburg, on the 21st October, 1913, have been adjourned to the 4th November, 1913, at the same time and place.





Latest Improvements in

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Haulage Brake Pulleys

Up to 25 feet in Diameter.

Mild Steel Built up Sheaves

Specially Suited for deep Mining, any Section or Load.

Safety Detaching Hooks A Speciality

Full particulars from: **THOMPSON & SOUTHWICK, LD.**

(Export Dept.) ENGINEERS,

Cables: "PULLEYS." TAMWORTH, England.

Automobile Notes.

Wire wheels are increasing in popularity in America, and many 1914 cars will be so fitted—among them the Packards at one extreme and the Fords at the other. The latter will also have electric light, the current being obtained from the fly-wheel magneto system which will be adapted to fulfil the new conditions.

* * * *

Electric vehicles for town work, in cities where power companies afford facilities for re-charging batteries, undoubtedly possess many advantages, and it is interesting to note that the erection of a large factory in Illinois, for their production on a large scale, is contemplated. It is stated that the promoter, Mr. W. E. Everitt, intends placing them on the market at £250.

* * * *

The extent to which the motor car is "taking on" in the East may be gained from the statement that over 3,000 had been ordered for China, Siam and the Philippines through an American firm.

* * * *

The Wolseley Company have for some considerable time been engaged in perfecting and testing a new small car which will shortly be placed upon the market. It is a cleverly-designed little car with a high-speed 4-cylinder engine, 62 m.m. bore by 89 m.m. stroke, developing about 9 h.p., and will be sold complete with two-seater body, screen, and hood, for 150 guineas.

* * * *

The car which has been named the "Stellite" will be manufactured and sold by the Electric Ordnance Accessories Company, Ltd., Aston, a subsidiary company to the Wolseley. A first batch is now in hand and will be ready for delivery early next year. Simplicity and ingenuity are displayed throughout the construction, and the result is a high-grade miniature car very different in appearance to so many of the flimsy productions so much in evidence to-day.

* * * *

A series of patent trailer ambulances are being built by Messrs. Carter, of New Cavendish Street, London, for work in South Africa, suitable for rough roads and where a regular ambulance is not readily available. The stretcher is suspended upon a light, well-sprung chassis, running on pneumatic-tyred wire wheels, and is provided with a light folding hood for the head, and a body-cover. One has already been built for the Victoria Falls and Transvaal Power Company, Ltd., and it is expected that they will be in large demand.

* * * *

The Cape to Cairo motor party reached Bulawayo after 19 days' actual running—the distance being 1,800 miles. Considering the weight of the car and the character of the roads, this must be considered a very creditable performance. Captain Kelsey speaks of the Dunlop tyres, with which the car is shod, as having performed excellently. It has only been necessary thus far to change two inner tubes and one damaged outer cover. The expedition is now *en route* for Victoria Falls and Broken Hill.

* * * *

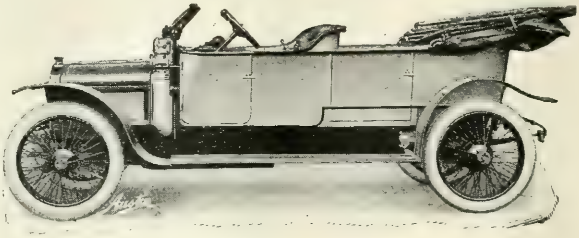
A George correspondent writes that the condition of Montagu Pass must be seen to be realised. It is impracticable even to horsemen. There are holes in the roadway six feet deep, and boulders have been heaped parapet-high across the track by the storm-water diverted through the railway works. The Government has, we are informed, acknowledged its responsibility in regard to the damage done, and repairs are in hand, but it will be weeks before the Pass is again open for traffic, and the cost will run into hundreds.

TRADE **HIC** MARK.
H. INCLEDON & CO., LTD.
Head Office, Birmingham. (Regd. in England.)
Phones 1911, 1912. P.O. Box 3620, Johannesburg.
ALL SIZES OF
PIPING, FITTINGS, VALVES, ¼in. to 18in.
CAST STEEL VALVES
For 1,300lbs. Working Pressure.
STOCKS IN JOHANNESBURG AND DURBAN.

CONSIDERABLE REDUCTIONS
IN
PRICES
OF
CONTINENTAL TYRES.
New Price Lists on Application.

"AUSTIN"

12 h.p. "Sirdar" Phaeton to seat four.



CHASSIS. Four cylinders, bore 3 in., stroke $3\frac{1}{2}$in., giving 12·5 brake h.p. at 1,000 revolutions, and developing fully 16 b.h.p. on acceleration to 1,500 r.p.m.; R.A.C. rating 14·3 h.p., four forward speeds and reverse; gate change speed; adjustable valve tappets; wheelbase 9 ft.; rounded radiator; high tension Bosch magneto; Ferodo sectional clutch; Claudel-Hobson carburettor; Austin detachable wheels; 810 x 90 Michelin tyres.

BODY AND EQUIPMENT. Phaeton body with leather upholstery and horse-hair cushions; Cape hood with side curtains; double folding glass screen with brass fittings; spare wheel and tyre; Lucas paraffin side and tail lamps; "Solar" mirror lens acetylene head lamps, with separate generator; speedometer and mileage recorder; horn, tyre pump, lifting jack, kit of tools and accessories.

PRICE. Complete car as above - - - - - - - - - - £500 Net.
(A two-seated car can be supplied to order at £460).

DELIVERY. Prompt delivery from

H. GILL & CO.,

45, ELOFF STREET, JOHANNESBURG.

P.O. Box 4659. 'Phone 1505. Wires: "MOTORITIES."

Mr. T. J. MacFie, the Johannesburg Civil Magistrate, in dismissing a claim for damages against the Municipal Tramways, instituted by a pedestrian who had been knocked down and injured, made some pertinent remarks regarding the obligations of the foot passengers towards traffic in general and tramways in particular, that pedestrians would do well to seriously consider.

He considered that it was grossly negligent for any foot passenger to cross at the spot in question without first looking to see what cars were approaching. A foot-passenger taking the plaintiff's route did so at his own risk. If the route was thus frequently used serious dislocations of the tram service would result.

* * * *

It is a hopeful sign when a Magistrate, dealing with a case arising out of modern traffic conditions, adopts such a commonsense attitude, and has the courage to express his opinions so emphatically in regard to the carelessness displayed by the majority of foot passengers using the public streets. This is in strong contrast with some other magisterial utterances which have found expression in these motoring days, and which were calculated to encourage the pedestrian in the belief that a priority of right to the road was his, and that wheeled traffic must give him the way. It is to be hoped that when a General Traffic Ordinance finds a place in our statute book the obligations of the foot passenger will be defined.

* * * *

The War Office subsidy trials of type vehicles are now in progress, and will continue till the 5th November. The trials will include a 100 miles speed test, either at Brooklands or over a specially selected road course.

* * * *

The Wilkinson kick-starter is a new device for starting the engine by the thrust of a pedal. This operates through a simple set of levers and a shaft, which may be termed a thrusting finger, which in turn pushes against studs near the rim of the flywheel, rotating it, and thus starting the engine. The device includes mechanism which throws the finger out of engagement, in the event of a back fire.

* * * *

One of the magistrates who has found much enjoyment in occupying a seat in the side-car of a friend's outfit, is reported to have remarked on a recent ride that but for the actual experience he would never have believed that in a 20 mile run, the motorist had so much to contend with in the vagaries of pedestrians and dogs haunting the roadways. After all, magistrates are human!

* * * *

One of the English tyre manufacturing concerns is sending a number of lady representatives to the United States on a business mission. This has the appearance of playing the States at its own game of hustle with a vengeance.

* * * *

In the one hour team race at Brooklands an event open to teams of three motor cycles of any one make, the Enfield lightweights scored a conspicuous win, covering 155½ miles conjointly. Indian, Rudge and Triumph teams followed in that order. Interest in the contest is spoilt by the fact that the latter teams each had riders who failed to cover as much as 20 miles from one cause or other. The best mileage was shown by Franklin on the small twin Indian, this being over 67⅜ miles. For 350 c.c. machines, however, the average of 51 miles per hour of the Enfields was excellent.

The value of motor transport and its development can best be understood by the statement that at present no less than 31 millions sterling per annum is paid for haulage in the City of London. A large part of this money goes to horse traction, but within the next five years it will go to motor haulage, and the proportionate growth of the motor industry will be even greater in the Colonies than in the United Kingdom.

At railway crossings some men drive their cars recklessly at the rails, regardless of the way they may project. Do not crash at them, but for a fraction of a second take your foot off the accelerator pedal, let the car roll over, and you will save your car from a shock that would do more harm than 50 miles of fair usage.

* * * *

In the recently issued report of the Select Committee on Motor Traffic, it was pointed out that of the total number of fatalities in the London streets in 1911 due to motor and other vehicles, no less than 34 per cent. occurred to children. The committee added that the schools appear to offer the best means of instruction as regards the cautioning of children as to the dangers of the streets. It also recommends that an occasional half-hour be devoted by headmasters and mistresses to school children on this subject. *The Autocar* to hand this mail, dealing with this subject, says: In one American school the following notice has been posted, and suggests that it be uniformly adopted:—

HOW CHILDREN MAY AVOID ACCIDENTS.

(1) Before crossing a street, stop. First look to the right and then to the left, and if it appear safe to do so, go ahead.

(2) When playing in the street, remember you have selected the most dangerous place possible, and that the public streets are not intended for children to play in.

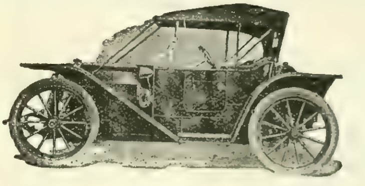
(3) In playing in the streets, remember that motor cars travel swiftly and silently, and, if they strike you, they are apt to kill you.

(4) In standing in the middle of the street, and cars or other vehicles are coming in both directions, keep perfectly still.

(5) The danger of stealing a ride on the back of a vehicle is that if you are not thrown off, you are liable to be run over by another vehicle when you jump off.

(6) If you throw a stone at a motor car you may injure the occupants, or cause the driver to lose control. Don't do it.

(7) Always look after a younger child, because the younger one does not realise the danger.



The K-R-I-T Car.
4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
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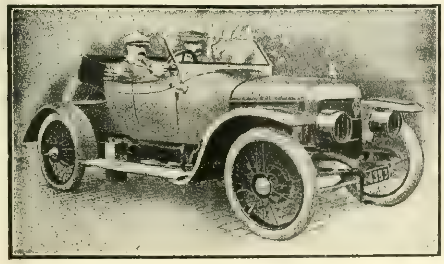

15'9 H.P. Colonial Vulcan.
"Imperial," Three-seater with Two-seat Dickey.

Important Notice.
ONE CAR, as per illlustration, for immediate delivery.
Price £450 complete.
ONE 5-SEATER, arriving incoming mail.
Price £475 complete.
These cars are beautifully finished, and deserve the closest inspection.
Demonstrations and all particulars from the Sole Agents:—
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(Vauxhall Agency)
Phone 2570. | 67, Kotze Street, Hillbrow. | Box 1940.

THE ROOIBERG MINERALS DEVELOPMENT CO.

LIMITED.

(Incorporated in the Transvaal.)

DIRECTORS' REPORT.

Submitted at the Fifth Ordinary General Meeting of Shareholders held in the Board Room, National Bank Buildings, Simmonds Street, Johannesburg, on Wednesday, the 29th day of October, 1913, at 10 a.m.

Gentlemen,—Your Directors beg to submit their Report, together with audited Statements of Account for the year ended 30th June, 1913.

The Reports of the Consulting Engineer and Manager are also attached.

CAPITAL.

The Capital of the Company is £180,000, divided into 180,000 shares of the nominal value of £1 each, all issued, and fully paid.

PROPERTY.

The Property of the Company consists of :—

(a) The freehold—including Mineral Rights—of the southern half of Olievenbosch No. 939, District Rustenburg, this portion being in extent 971 morgen 141 square roods.

(b) The mineral rights of the adjoining farm Hartebeestefontein No. 310, in extent 3,186 morgen 320 square roods.

(c) The surface rights of 29/32nds of the said Farm Haartebeestefontein No. 310.

OPERATIONS.

The following are the results of the year's operations :—

Mill of 10 stamps ran	348.4	days.
Ore mined	24,521	tons.
Ore from Bins	113	tons.
Ore taken from Dumps	1,154	tons.
Waste sorted out (15.8 per cent.)	4,046	tons.
Ore milled	21,742	tons.
Sands and Slimes retreated	14,175	tons.
Total treated	35,917	tons.

Concentrates produced 1,196 long tons of an average grade of 69.54 per cent. metallic tin.

It is estimated that there were on hand at 30th June, 30,310 tons of accumulated slimes, middlings, etc., of an average assay value of 2.5 per cent. metallic tin.

The Water Storage Reservoir and Boreholes have provided an ample supply of water.

FINANCIAL.

The revenue from Tin Concentrates amounted to £184,867 19s. 2d. ; the expenditure on Working Account was £96,674 7s. 4d. ; the Working Profit for the year was thus £88,193 11s. 10d. A further £860 4s. 1d. was derived from interest, etc., making a gross profit of £89,053 15s. 11d., which, together with £13,731 7s. 4d., brought forward from last year, was dealt with as follows :—

Interim Dividends Nos. 4 and 5 of 15 per cent. and 20 per cent. respectively	£63,000	0	0
Appropriated for Expenditure on Fixed Assets	5,535	11	3
Directors' Remuneration	3,150	0	0
Government Tax	4,035	18	10
Reserve Fund	10,000	0	0
Carried Forward	17,063	13	2
	£102,785	3	3

A Reserve Fund has been established to provide for the continuance of development and exploration on an adequate scale should working conditions at any time prove less favourable than those at present obtaining, and an amount of £10,000 has been set aside from the year's profit for this object.

In accordance with the policy agreed upon, all expenditure upon Shaft Sinking, Development and Exploration, amounting to £30,073 has been charged direct to Working Costs.

The balance of Concentrates Suspense Account appearing in last year's accounts was transferred to Profit and Loss Account at the close of the year.

The average price for the year realised for sales of metallic tin was £218, as compared with an average of £197 for the previous year.

DIVIDENDS.

You will be asked to confirm the action of the Directors in declaring Interim Dividends Nos. 4 and 5 of 15 per cent. and 20 per cent. respectively.

DIRECTORS.

You are asked to confirm the appointment of Mr. John Munro as a Director of the Company.

In terms of the Articles of Association, Messrs. G. W. Higgins and W. McCallum retire from the Board, and, being eligible, offer themselves for re-election.

AUDITOR.

You will be asked to fix the remuneration of the retiring Auditor, Messrs. Alex. Aiken and Carter, and to appoint an Auditor for the ensuing year.

WM. DALRYMPLE,
W. McCALLUM,
W. J. GAU,
F. H. ELKAN,
JNO. ROY,
JOHN MUNRO, Directors.

Johannesburg, 1st September, 1913.

Appropriation Account.

Dr.				Cr.			
To Dividend No. 4 of 15 per cent. ...	£27,000	0	0	By Balance, 30th June, 1912	£13,731	7	4
,, Dividend No. 5 of 20 per cent. ...	36,000	0	0	,, Balance Profit and Loss Account...	81,867	17	1
,, Amount Appropriated for Capital Expenditure	5,535	11	3				
,, Amount transferred to Reserve Fund	10,000	0	0				
,, Balance to Balance Sheet	17,063	13	2				
	£95,599	4	5		£95,599	4	5

L. S. RAYMOND, Secretary.

WM. DALRYMPLE, Chairman.
W. McCALLUM, Director.

Johannesburg, 1st September, 1913.

Examined and found correct.
ALEX. AIKEN & CARTER, Auditor.

THE SOUTH AFRICAN
Mining Journal,

WITH WHICH IS INCORPORATED
South African Mines, Commerce and Industries.
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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The "Gold Fields" Year.

The Consolidated Gold Fields of South Africa, Ltd., have received the following cable from their London office regarding the company's operations for the financial year ending 30th June, 1913: "The realised net profit on the year's operations, after writing off the depreciation as stated hereafter, is largely derived from dividends received on investments, and after deducting debenture interest and all outgoings, shows a balance to credit of £371,745 17s. 10d., from which the dividend on the first and second preference shares, an interim dividend of 1s. per share on the ordinary shares, English income tax, and French Government taxes, have been provided, leaving £110,404 3s. 6d. which, added to the sum of £52,112 brought forward from last year, leaves £162,516 3s. 6d. The total market depreciation on investments amounts to £1,402,201 6s. 10d., which has been provided for by charging £1,000,000 against the reserve and £402,201 6s. 10d. against the year's profits. Board of directors recommend that a final cash dividend of 5 per cent. free of income tax be paid on the 2,000,000 ordinary shares amounting to £100,000 and making with the interim dividend 2s. per share for the year, leaving a balance of £62,516 3s. 6d. to be carried forward to the credit of the current year's profit and loss account. Shareholders will receive report 10th November. Shareholders' meeting fixed for 18th November."

* * * *

De Beers and British Income Tax

The vexed question of British income tax, which has been hanging over De Beers for a number of years, is now settled on these terms—that the British Government have accepted a payment of £110,000 for the claims which they alleged they had upon the company from April 5, 1908, to April 4, 1912, and the company's representatives in London have arranged that the basis for arriving at a settlement in future shall be on a three years' average of the profits received by the company from the Diamond Syndicate. This is an amount the company have never demurred to paying. The outcome of this British income tax settlement is satisfactory to the company. De Beers is to all intents and purposes a Colonial company, and has the benefits in England of being a Colonial company, so that shareholders there have no longer to pay the tax in Great Britain. Naturally those who live in Great Britain will have to pay the tax.

* * * *

Barnato Mines in October.

The Barnato group has again excelled itself in the matter of profit-earning, the difference between revenue and expenditure last month being £104,597. To this total the Consolidated Langlaagte, Van Ryn Deep and Witwatersrand each contribute over £23,000. With the exception of February (a short month) and July (the month of the strike) the outputs and profits of the mines of the Barnato group have risen steadily month by month for over a year. The September profit aggregate was £99,114, so that last month records a substantial improvement over even that excellent showing. The Van Ryn Deep profit of £23,680 from 34,400 tons milled by 70 stamps is an eminently satisfactory result and foreshadows even better things in the near, if not the immediate, future. Development continues to expose good values over substantial widths of reef.

* * * *

Trend of Tube Mills.

As we pointed out recently, the long tube mill, originally adopted in metallurgy from the cement industry, is finding less favour and is being shortened, with consequent advantage in reduced power consumption. This is true not only on the Rand, but also in America. At one time Rand tube mills were "standardized" at 22 ft. by 5½ ft. More recently these dimensions have been changed to 16½ ft. by 6 ft. In Mexico experiments were made on a long tube mill by boring discharge holes at intervals throughout its length, and examining the products obtained after passing through different lengths of the mill. It was found that the first 16 ft. of a 22-ft. tube gave a product as good for the purpose desired as did the entire mill. Hence the length was accordingly reduced. Two other features of tube-mill construction and operation now being adopted in the States are the tire-discharge and operation of mills in tandem. The tire-discharge is 18 in. in diameter, fitted with reverse spiral to prevent discharge of pebbles. The use of tube mills in tandem, with intermediate classification, has been found, in some cases, superior to a larger number of mills in parallel, treating the same tonnage of ore and yielding as good a product for cyaniding.

* * * *

The Titaniferous Iron-Ore Myth.

There has long been a semi-popular, semi-scientific belief that the titaniferous iron ores of South Africa, like those of the United States, constitute a national resource of almost immeasurable extent, of no value for present use, but, in effect, a locked treasure house lacking only the key of metallurgical genius to render its stored wealth available for use, and to grow into a great iron industry. Probably the rather vague ideas of most people on this subject took the form of the belief that by some metallurgical trick or new discovery the titaniferous ores could be utilised unmixed in the furnace in much the same way as other iron ores are at present handled. The conclusions arrived at by Mr. Singewald as a result of his study of this subject under the auspices of the U.S. Bureau of Mines throw a useful light on this subject. The Bureau has seldom done anything more useful than to authorise this investigation. Two prominent points are brought out by Mr. Singewald in his bulletin. First, that the American deposits of this nature are much smaller and much less valuable than heretofore supposed; and, second, that their utilisation will be a gradual process achieved slowly by various methods involving detailed modifications of existing practice, rather than by any stroke of original genius. It is the latter fact, of course, which chiefly interests us in South Africa.

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The "Knights" Company's New Plant.

A portion of the new tube mill plant at the "Knights," or Witwatersrand, mine has been running satisfactorily for some little time past, and within the next week or so it is hoped to have the full installation of five tube mills at work. One or two final matters have had to be attended to, but the equipment is a thorough and assured success and by its use the value of the residues will be substantially lowered. There are five tube mills, each 16 ft. 6 ins. by 6 ft. in diameter (of similar dimensions to the tube mills at the Van Ryn Deep and Consolidated Langlaagte) fitted with Schmidt feeders and Osborne liners. They will be electrically operated, power supply having been arranged for with the Victoria Falls Power Company. The drive end is the discharge end in the case of each mill. Accessory portions of the new equipment are Caldecott classifying cones arranged above the tube mills and Allen sand pumps with launders, pipes, etc. Adjacent to the tube mill house is the plate house, where twenty stationary plates —four to each tube mill—have been erected. The slime plant has been added to by two collecting, one clarifying, and four treatment tanks and all necessary pipes and launders, etc.

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Messina Furnaces.

In commenting on the smelting of copper ores at Messina, our contemporary, the *Mining and Scientific Press*, remarks: "Small reverberatory furnaces for the smelting of copper ores are not in the fashion nowadays, and it is correspondingly interesting to learn that two furnaces with hearths 11½ by 23 feet are under construction at the Messina copper mines in the Northern Transvaal. Coal will be used as fuel, seven or eight tons being required to smelt the 20 tons of ore which it is expected each furnace will treat daily."

The Globe and Phoenix.

From the interim report of the Globe and Phoenix Company for the half-year to June 30, 1913, it appears that during the period 36,628 tons were milled for a total return of 62,792 ozs. Working costs, including 5s. 6d. for development redemption, averaged 43s. 3·42d., and the working profit for the half-year was £163,379. Underground labour during the latter part of the six months was insufficient, and at the date of the manager's report, August 25, there was no improvement. Mr. Fraser, however, expected that they would shortly be in a better position, and a letter from the manager, under date September 16, states that he has now upwards of 1,000 natives on hand, and is relieved from any labour anxiety for a good many months to come. The consulting engineer (August 3) considered it too early as yet to form an estimate of the value of the 20th level, but since that date an improvement has been reported in the winze No. 3 A, where the reef is widening out in going down from the 19th level, and the position appears more hopeful. The adjourned extraordinary general meeting will be held on October 27, when the committee will submit a resolution with regard to the remuneration of the directors, which will, it is hoped, put an end to all dissensions. It is proposed to fix the directors' fees at £100 per annum, with an additional £300 for the chairman, and further remuneration equal to 1 per cent. of the cash or other assets distributed to the shareholders by way of dividend in respect of the year, always provided that a sum of not less than £2,000 shall be paid by way of further remuneration. The resolution as framed seems to provide for the payment of £2,000 additional remuneration to the directors, even if no dividend is paid. It represents a great reduction in the fees, as under the old scale the fees payable for 1912 were £14,909, while under the proposed scale they would only have been £3,712.

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Oil in South Africa.

An interesting circular has just been issued by the Consolidated Oilfields of South Africa, Ltd., reporting progress made to date. Mr. J. E. Mills Davies, in his report of March 28, 1913, on the company's properties at Ceres, Cape Province, stated that immediate steps would be taken to sink a borehole or boreholes on the sites selected by Mr. Mills Davies. It so happened that, just as every detail in connection therewith had been finally arranged, it was announced that Mr. E. H. Cunningham Craig, an oil expert, had sailed for South Africa to investigate the oil occurrences there on behalf of the Union Government. In these circumstances, and believing that in the ordinary course of events Mr. Craig would land at Capetown and would first of all visit Ceres, which is less than 100 miles north therefrom, it was considered prudent to instruct Mr. Mills Davies to delay boring operations pending Mr. Craig's arrival. Mr. Mills Davies entirely approved of this course, and with some difficulty negotiated matters with the boring contractors. As it turned out, Mr. Craig did not land at Capetown, but went on to Port Elizabeth, and visited many places in the Orange Free State, the Transvaal, and Cape Province before finally, in the middle of August, he visited Ceres on his way home. He was accompanied during his visit to the district by Mr. Mills Davies, and arrived in England on September 13. Although, apparently, Mr. Craig has been induced by Press interviewers to express opinions on the oil possibilities of some parts of South Africa, and incidentally has stated that he approves generally of the report of Mr. Mills Davies on the company's properties, his looked-for report has not yet been published. It might, perhaps, have been advantageous to have seen Mr. Craig's report before commencing boring operations, but as it is not forthcoming, and as, whatever Mr. Craig's views may be, Mr. Mills Davies adheres, in all respects, to his own report, it has now been decided to lose no more time but to proceed at once to put down a bore; and Mr. Mills Davies has been instructed accordingly. In the meantime properties in other parts of South Africa stated to be oil-bearing have been investigated, and negotiations in connection with certain shale oil properties are pending. On one property over which the company has secured rights ozokerite has been found by the expert sent to investigate, and he reports the other petroleum indications to be excellent. As the presence of ozokerite is a certain indication of the existence of petroleum beneath the surface, there appears to be good reason why the shareholders should congratulate themselves on this discovery, which is in a part far removed from any visited by Mr. Craig.

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Government Enquiry for Voorspoed.

TheMinister of Mines, in terms of the Free State law, has decided to appoint a Commission to investigate the payability of the Voorspoed Mine. As previously made known, he has already called upon the De Beers Company, who are now the proprietors, to resume the working of the mine referred to, and they have refused. This call was addressed to the company following an inquiry by officials of the Department, who reported the mine to be, in their opinion, payable. The next step, as required by law, is the appointment of a Commission, to which the De Beers Company and the Government will nominate a member apiece, and these two will choose a third. Should this Commission regard the mine to be payable, and the company still refuse to work it, the Government will then have the power to lease the property. It appears that the Voorspoed workings, which are of the open order, have stopped at an average depth of about 140 feet, where a certain amount of rock crust has been encountered. This rock crust intrudes into a portion of the total claim area of 605 claims, and the difficulties created thereby have been assigned by the company as their reason for discontinuing operations.

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Natal Ammonium.

The report of the Natal Ammonium, Ltd.—the Harper Rouillard concern, of which Lord Selborne is a director—submitted to the statutory meeting on the 23rd instant, states that the total number of shares allotted is 212,000 of £1 each, all of which have been fully or partly paid in cash as under:—507 fully paid, 211,433 3s. per share paid, 60 1s. per share paid. The purchase consideration payable by the company is to be wholly satisfied by the allotment to the vendor syndicate of 13,000 Preference shares of £1 each, fully paid, and 100,000 Ordinary shares of £1 each, fully paid. The total amount of all the shares allotted, as aforesaid, is £32,224 19s.

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Neumann Mines in October.

Last month the mines of the Neumann group earned an aggregate profit of £59,873 as compared with £65,242 in September. The value of gold produced and the tonnage of ore crushed shows no marked diminution, and it is to be assumed that working costs have risen somewhat. At the Wit. Deep the grade has fallen since there were crushed 47,190 tons last month for a recovery of £65,933 as against 46,200 tons and £68,446 in September. The profit has fallen from £30,709 to £28,135. The Wolhuter, which in September recorded increased profit due to an abnormal increase in the value of stope faces and amalgam obtained from clean up of tube mill plant, earned £13,296 against £15,610 in September. The Consolidated Main Reef's profit is a little higher at £11,542, but the earnings of the Main Reef West and Knight Central show decreases, although not very large ones.

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Planet-Arcturus.

Although the Planet-Arcturus Gold Mines is nominally capitalised at £475,000 it will have to raise more funds to instal a reduction plant, and as the shares are standing at a considerable discount in the market, such funds cannot be raised by means of a new share issue unless there is a reorganisation. Shareholders are told in the directors' report, which was presented at the recent general meeting, that a scheme will be submitted to them "in due course." At the end of December last the book value was £53,928 and the market value £31,489, a difference on the wrong side of nearly £22,500. Probably the difference is still greater now. Two directors are now retiring, and it is proposed that Mr. J. C. Prinsep, of the Gold Fields Rhodesian Development Company, should take the place of one of them.

TOPICS OF THE WEEK.

NEW MINE REGULATIONS.

Of the multiplication of regulations to govern the mines of the Rand there is no end, and a fresh batch made its appearance in the last issue of the *Government Gazette*. These, it is understood, have been debated, in their provisional form, at great length with the Chamber of Mines, the Mine Managers' and the Miners' Associations. To those mainly interested, therefore, the new rules come as no surprise. They are designed mainly to lessen disease and prevent accidents, and no one can quarrel with the good intention. Too much, however, must not be expected from the promulgation of more rules and regulations. On this subject, Sir Thomas Holland, the President of the Manchester Mining Society, made some pertinent remarks very applicable to Rand conditions in mail week. He said: "We have heard much recently of the multiplication of rules and regulations prescribed by Government for the control of mines. It is, however, important to remember that the great progress which has been made in increasing the safety and general amenities of the miner, as well as the more economical production of the mineral, are due, not to rules, but to the general development of the technology of mining, due in fact to the support of institutes like this. Where, however, human lives are endangered by any system of operations, rules of some sort are necessary to reduce, as well as to fix the responsibility for, dangerous modifications of methods found by long practice to be the safest. But when the mastery of rules requires more study than the technical problems that confront the mine manager, they themselves become a greater danger than those they are intended to forestall. I am not qualified to offer an opinion on this point; but, judging by the numerous complaints one hears, one would imagine that Government rules had recently shown a power of multiplication not exceeded by the lowest forms of life. Although it is true that rules of precaution can be so numerous as to defeat their own ends and 'fetter reason,' yet most of you will agree that when, as mine managers, you are suddenly confronted with a problem which demands immediate action, it is your experience or the simple recollection of a technical practice that guides you more often than any reasoning from the fundamental principles of science." However much we multiply rules on the Rand, it is to be hoped the truths underlying Sir Thomas Holland's remarks will not be forgotten. In this connection the statement made by Mr. John Munro, President of the Chamber of Mines, at Wednesday's function, when the Governor-General presented the life-saving medal of the St. John Ambulance Association to Mr. F. P. Cloete, is noteworthy. Mr. Munro showed that those who control the working of the mines are keenly endeavouring to bring about a reduction in the accident rate. To illustrate the anxiety of the controllers of the mines to bring home to workers of all classes the every-day necessity of never-ceasing vigilance in observing the health and safety regulations, Mr. Munro mentioned that a committee had been formed, drawn from directors of the Rand Mutual Assurance Society, a representative of the Mine Managers' Association, and a consulting engineer. The objects of the committee are to devise and recommend the best means of impressing every worker in the mines with his individual responsibility, so that the familiarity with danger, which too often breeds contempt, shall not be allowed to cause laxity and disregard of the regulations. The Rand Mutual Assurance Society is, of course, an entirely private association, whose members are the mining companies themselves, and is administered by the representatives of the mines for the protection of its members, and the committee which is now constituted has been strengthened by the additions from the Mine Managers' Association and consulting engineers. Good fruit is expected to result from the educative efforts of this body. Elsewhere we print some of the salient features of the new regulations, and here it is enough to hope that the Inspectors of the Mines Department will carry out their new duties in a sympathetic spirit. All ranks and grades of employees on the mines, from the manager downwards, are now alive to the vital necessity for combatting accidents and disease, and the Mines Department by adopting a helpful rather than a hostile attitude can now best complete the good work of minimising accidents and disease, which it has successfully carried so far.

A PRACTICABLE SCHEME OF LAND FOR MINERS.

THE mining community of the Rand is indebted to Sir Percy Fitzpatrick for bringing forward a practicable scheme of putting land within the reach of men on the mines. Sir Percy's scheme, if we understood him aright, is that every mining company on the Rand should acquire its own farm and sell it in small lots to its employees on easy terms at cost price, plus interest. The idea is, of course, not novel, as Sir Percy himself claims to have propounded it ten years ago, and some not very dissimilar suggestions have appeared in our own columns at different times. Prefacing his proposal by saying he had thought much of the instability in regard to residence and employment on the mines, Sir Percy said he thought that what was wrong was the absence of the hereditary factor; there was not the tie between employer and employed which existed in other countries. The only remedy as he saw it was for every gold mining company to own or acquire a farm suitable for closer settlement, and to offer this on the basis of cost, plus interest, to employees who had been a certain time in the employment of the company. The idea was to give working men an object for their savings, and a sound investment for them; thirdly, to provide a home for their declining years or earlier if they wished to go there; and fourthly, there was the question of the white settlement of the country. It is to be hoped that Sir Percy will follow up his excellent suggestion by formulating a definite scheme and putting it in concrete form before the mining companies. His experience and standing in the public life of South Africa will naturally carry great weight, and invest his representations with an influence and authority denied to others. For our part we shall do everything possible to keep the matter before the companies and the public. Sir Percy's proposal comes at an opportune moment in view of the annual dry-farming congress held in Johannesburg this week. In opening it, His Excellency the High Commissioner paid a notable tribute to the success that has awarded the persistent efforts of Dr. Macdonald and others in demonstrating the possibilities of dry-farming in South Africa. Ample confirmation of his optimism was forthcoming during the proceedings at the congress. Thus Mr. Heinrich S. du Toit, the Government dry land agronomist, in concluding his review of the work done and the results obtained on the dry-farming experimental stations, very significantly said: "Very many are the farmers who have already successfully dry-farmed throughout the Union. Many reports of dry-farming successes are reaching us almost daily from the dry regions of the Sub-Continent. It will be possible to compile a small volume of the letters and statements received from farmers about their dry-farming successes . . . . . let it suffice to say that the overwhelming majority of our South African dry-land farmers have had higher yields per acre than we have had at Lichtenburg because their soil is in every case better." Dr. Macdonald's summing up of the possibilities of dry-farming can hardly be improved upon. "Irrigation works," he said, "are not only confined and costly, but they are also impossible over enormous areas within the Union; dry-farming is cheap and within the reach of nearly every South African farmer. It is, in our opinion, plainly the duty of South Africans and of the Government to try to utilise, at least, certain portions of these vast stretches of waste-lying fertile land for the planting of useful crops, grasses or trees. This will enable us to support more human beings, and also to breed immensely more live stock, to work up new industries, and ultimately 'a white man's country.' It will certainly be unwise and short-sighted, even under the most charitable analysis, to say or claim that dry-farming, in its present state of development, is possible in howling deserts or in every portion of the arid or semi-arid regions throughout South Africa. We have, however, quite enough experimental evidence to prove that there is an enormous acreage of fertile land throughout our Sub-Continent which falls within the zones of possible and profitable dry-farming. So vast is the acreage that it will take decades, if not generations, to develop the whole of it properly into model farms or 'holdings.'" Limitations of space will not permit us to quote more from the deeply interesting and thought-compelling contributions to the related subjects of dry-farming and closer settlement during the week. Suffice it, that the proceedings of the congress have demonstrated that Sir Percy Fitzpatrick proposal to enable mine employees to obtain land is not only feasible and opportune, but has in it the true material of real constructive statesmanship.

MINERS' DEMANDS ELSEWHERE.

THE apparently ever-growing and insatiable demands of the British miners' trade unions naturally convey a moral and a warning to us in South Africa. It is noteworthy that the decisions of the recent Miners' Federation Conference at Scarborough were, in the language of the political world, of the "whole-hogging" character. Never in the strenuous history of the British Miners' Federation has an annual conference pledged the organisation to so ambitious a programme of work. Here it is in a sentence—the enactment of an Amended Minimum Wage Act, its extension to all surface workers, the establishment of a new wage basis, 50 per cent. higher than the existing wages bases of 1879 and 1888; a minimum wage of 7s. per day for all men employed at the coal face or in ripping, the establishment of one National Board in place of the five big Conciliation Boards, beside the minor Boards now in operation; and the Syndicalist policy of the general strike in combination with the railway and transport workers. When we come to examine the many and important wage proposals which make up this ambitious programme to which the Scarborough Conference has committed the Miners' Federation we appreciate even more keenly the disturbing effect which it is likely to exercise upon the future of the British coal trade. The detailed amendments of the Minimum Wage Act would almost revolutionise the measure which the Government rushed through Parliament in such hot haste in settlement of the national coal strike of last year. It was an experiment, enacted for a limited period of time, to cope with a national emergency. The Federation propose to make this temporary measure a permanent part of the wage machinery of the coal trade. That they will succeed is not improbable because a step of this kind, once taken, is hardly ever retraced. The present Act is limited in its operation to underground workers, and the reason given by the Government for adopting what was an entirely new departure in making statutory regulation of the wages of adult labour was that the conditions of employment in coal mines were exceptional and dangerous. The miners now ask for the extension of the principle of a statutory minimum wage from the underground workers to all persons employed on the surface of the pits. In this demand the miners are likely to have the support of the whole Labour party, and of the Trade Union movement, for, undoubtedly, the workers in a good many other trades than that of the miners' have been impressed with the idea of a fixed minimum below which wages cannot fall. Therefore, in making this demand the miners will have a considerable force of Trade Union opinion to support them. Then it is proposed that the minimum for each grade of workmen as fixed by the chairmen of the District Boards shall be increased by at least 9d. per day. Again, it is proposed "that in all disputed cases the onus of proof shall be on the employers." It would be difficult to imagine any more one-sided arrangement. Surely, that is a matter for the tribunal which has to determine the facts in every disputed case. It is to be hoped that miners in this country will take a lesson from all this in regard to the dangers of placing themselves unreservedly in the hands of leaders who never know when to stop in the framing of impossible demands.

SOUTH AFRICAN OIL: IMPORTANT ANNOUNCEMENT.

Full Details of Parent Company—Finances and Backing—Mr. J. A. Greene Interviewed.

During the course of the week we again had the pleasure of an interview with Mr. J. Arthur Greene, who is still staying at the Carlton Hotel. On the occasion of our previous interview with Mr. Greene, we pointed out to him that there was naturally considerable curiosity in certain circles as to those with whom he is associated in connection with the development of the South African shale deposits, and also as to the standing of the parent company, to which he has previously alluded. Mr. Greene promised to favour us with full particulars for our next issue, and in compliance with that promise very kindly placed full information in our hands, from which it appears that the company in question has been registered under the title of the "Cape-Cairo Oil Development Co., Ltd." The nominal capital of this company is £50,000 in fully paid shares of £1 each. The officers of the company are as follows:—Directors: Rear-Admiral William Fane de Salis, M.V.O., R.N., Brookfield, Alverstoke, Hants. (chairman); Major-General Sir Norman Robert Stewart, Bart., C.B., 51 Kensington Mansions, Earl's Court, S.W.; A. C. Bourner, F.C.A., Bush Lane House, Cannon Street, London, E.C.; J. Arthur Greene, Sheen Gate Gardens, East Sheen. Bankers: Messrs. Lloyds Bank, Ltd., St. James' Street, London, S.W., and Branches. Auditors: Messrs. Cole, James & Bond, 48 Gresham Street, London, E.C. Solicitors: Messrs. Mayo, Elder & Co., 10 Drapers Gardens, Throgmorton Avenue, London, E.C. Secretary and Registered Offices: J. A. Campbell, 25 Victoria Street, Westminster, London. In addition to above, Mr. Greene is, on behalf of the board, appointing local officers to act in South Africa. We suggested to Mr. Greene that it would be interesting to know what financial or other bodies were connected with or represented by the English directorate, but this information he was not at liberty to divulge, although he had no hesitation in producing for our inspection a certified copy of the memorandum and articles of association of the company, from which it is apparent that a very substantial amount of cash was paid up prior to the directors going to allotment. The whole of the cash was found privately, and therefore no prospectus was issued to the public. In accordance, however, with the Companies' Acts, a statement in lieu of prospectus was prepared, and this, amongst other things, states briefly the objects for which the company was formed, practically as given in our last issue. It is interesting to note the last two paragraphs of this statement, which are as follows: "It is intended to form subsidiary companies on the London or other European markets on a basis which should show handsome profits to this company. None of the shares of this company are offered for public subscription."

Mr. Greene is very cheerful and optimistic about the future success of the undertaking, as, since the publicity given to this matter, he has been inundated with letters and samples of the shales from people resident in, or connected with, that part of the country between Mombasa and Uitenhage upon which the strata in which he is especially interested occur. In view of the remarks made in the House of Commons last July by the Secretary for the Colonies relative to oil and the Navy (as quoted in our last issue), and the well-known public and financial standing of the officials of this company, it is evident that the points then emphasised have been observed with unusual accuracy.

According to a prominent engineer's report in the possession of Mr. Greene, the quantity of shale in the deposits is practically inexhaustible—a fact of which those associated with the company were apparently well aware for long before the company went to registration.

"There must be," continued Mr. Greene, "in this vast area, shale sufficient to keep many large companies going for practically all time, whilst the market is, of course, assured—in fact the oil age is only just in its infancy, and so the industry is starting on a rising market, which will greatly increase during the next few years."

"How do you propose to work all these areas on your small capital of £50,000?" we asked.

"We don't propose to use the capital of this company at all in that way. Every property or area worked will entail an actual expenditure in machinery, etc., alone of between £250,000 and £500,000, according to the scale upon which each individual company will operate. This is a private company with a purely nominal capital, formally registered for the purpose of acquiring and controlling as much of the deposit as we can secure within the district in which we are interested—nothing outside that district appeals to us—and whilst I don't say there is not as good somewhere else—there may be, of course—but whether there is or not our areas are so situated that we can operate them more economically for our purpose than areas in any other locality could be handled. No, we are simply the parent company, and we have every reason to believe that we shall have a large family of healthy children of whom we shall be very proud and in whom we shall be keenly interested, inasmuch as the parent company will retain a large shareholding in each subsidiary."

"Many of the people of South Africa treat oil in the country as a joke," we suggested.

"So I find—I'm rather glad of it," replied Mr. Greene; "it has made my work much easier, but I wish the people would forget also that the Rand was turned down by all the experts who came out from England, Australia and America for years—if they'd only forgotten that I'd have saved a lot of time and money too. I recall one Colony which some fifteen years ago imported all the timber it required in the firm belief that their own timber was no good—too scanty and so on. Last year it exported more timber than any other place of its size in the world, and possesses the largest and most up-to-date pulp and paper mills in the world. As a matter of fact, I obtained 320,000 acres of forest land there myself for an annual rental of about a halfpenny an acre—but that was before the people realised what they had got."

"Are any of the shares of this parent company to be put on the local market?" we interrogated.

"No; as you see, none of our shares are offered to the public, but I have been approached by certain people who think that the people here should have an opportunity of coming in on the 'ground floor,' and something may be arranged—if not, there will be plenty of opportunity for a 'flutter' when our first subsidiaries appear."

Continuing, Mr. Greene said: "We should have had no objection to a few of the people coming in on the 'ground floor,' but we should seriously object to our shares going into the hands of people who would, on the strength of ourselves and the publicity which has been given to the matter, rush them up to an outrageous figure (as has been done here on more than one occasion with parent company shares), and then blaming us if they did not get out at the top price."

"Since my arrival here Mr. A. W. Speyer, of 119 Stock Exchange Buildings, has been added to the directorate, and I should be very much obliged if you would request those of your readers who wish to communicate with us to address their letters to him direct."

New Kleinfontein.

The following are the results of the operations on this company's property for the month of October, 1913:—Kleinfontein Group, monthly results: New Kleinfontein Company, Ltd.: Stamps, 200; days run, 29·626; tube mills, 4; tons milled, 50,000; gold recovered (fine ounces), 15,834·294; net value, £66,580 16s. 11d.; profit, £23,156 11s. 8d.; working costs (excluding development), 16s. 5·321d.; development to working costs, 11·115d.; total working costs, 17s. 4·436d.; capital expenditure, £779 7s. 5d.

RECENT RETURNS FROM THE ROSE DEEP.

Effect of Labour Shortage on Tonnage—Costs and Profits Discussed.

Recent crushing operations at the Rose Deep mine have had to be conducted on a scale considerably below the capabilities of that property and the capacity of the mills. In the first four months of the current year the company milled 271,130 tons, or an average of nearly 68,000 tons per month. In April, 68,810 tons were crushed, and in May high water mark was reached with nearly 70,000 tons, but in June the quantity declined to 67,750 tons, and in July—the month of the strike—to 61,260 tons. Since the strike the Rose Deep has lost a large number of native workers.

Labour Complements.

The full unskilled labour complement of the mine is given as 5,447, and just previous to the strike the number of coloured labourers on the books of the company was 4,716. In September the number had declined to 3,497, and this contraction in the labour force has been reflected in the crushing results to a marked degree. Thus the August tonnage was 61,300 and that of September only 54,300, or over 15,000 tons below the capacities of the two mills. The Rose Deep, it may be remarked, has two batteries—the Rose Deep plant of 200 stamps and the Glen Deep mill of 100. During September these two equipments supplemented by seven tube mills ran for not more than 22·67 days. The September profit, £20,267, or 7s. 6d. per ton, compares unfavourably with £150,976 earned in respect of operations for the first four months of this year, and with £41,000, or 12s. 1d. per ton, in April. Since June last working costs have risen from 16s. 1d. to 17s. 8d., whilst the grade of ore milled has also witnessed a decline. For these results labour troubles are mainly, if not wholly, responsible. Recent returns are all the more disappointing, inasmuch as about four months ago certain additions and improvements in the slimes plant of the Rose section of the mine were effected. The total expenditure involved in connection with this work was in the neighbourhood of £6,500, and it was carried out with a view to enabling the management to put 70,000 tons per month through the batteries and cyanide plants all the year round. The attainment of this object has been frustrated by reason of scarcity of labour.

Tropical Natives.

The difficulties arising from the effects of the strike have been accentuated by the Government's decision that no further tropical natives will be allowed to be recruited. Last year the Rose Deep Company had an average of 638 of these boys at work. At the last annual meeting Mr. H. Eckstein, who presided, in speaking of the native labour position, said: "The supply of native labour to the mine has, during several months, been almost excessive. I mention this in case you should have misgivings on account of the recent announcement that no further tropical natives will be allowed to be recruited. We had an average of 638 of these boys working last year, and unless, in addition to the probable gradual loss of these boys, there is a serious reduction in the number of our other labour force, I believe that we shall experience little inconvenience in this connection." Since Mr. Eckstein made those remarks the position in regard to labour has developed in a way which could not have been foreseen in the earlier period of the year, and any augmentation of the present complement would be most acceptable to the Rose Deep as well as to many other mines along the Main Reef series. In regard to development, we understand that both the Rose and Glen sections continue to open up well, and under more favourable working conditions no difficulty should be experienced in working up to the range of profit obtaining in the earlier months of the year again.

YIELDS FROM ACCUMULATIONS.

An Important Source of Contribution to the Output—Gold from Old Slime Dams.

Most mines on the Witwatersrand possess accumulations of valuable products in some shape or form, generally as accumulated slimes. In the earlier days of the Witwatersrand slime was the bugbear of the metallurgist, and throughout the length and breadth of the Rand one may see dams of this material, which in some instances carry values approaching the grade of ore recovered from battery, tube mills, sand and slime plants of some of the lowest grade mines working on the Rand to-day. The development of slime treatment on economical and effective lines has been one of the features of the metallurgy of gold in recent years. Rapid as has been its establishment on these fields, it has not been practicable for the mines to as yet treat all the slime product discarded in the earlier days of the industry. The following table shows that the yield from accumulations is not an unimportant contributor to the current gold output. The figures given below are for the month of September, and it should be pointed out that all the yields recorded are not in respect of slime. In some instances where high recoveries from small tonnages are given the yield has probably been derived from assay office by-products, concentrates, etc. The full table of yields from accumulations for all mines on the Rand is as follows:—

	Tons.	Yield.
Aurora West	19	£89
Brakpan Mines	4	688
City Deep	2,400	1,270
City and Suburban	24	561
Consolidated Langlaagte ..	493	620
Consolidated Main Reef ..	9	276
East Rand Proprietary .	7,030	8,712
Ferreira Deep	230	204
Geduld Proprietary	2	552
Ginsberg	129	55
Glencairn	2,202	828
Jupiter	—	30
Knight Central	2	127
Langlaagte Estate	8,979	5,624
Luipaardsvlei Estate . .	4	106
Main Reef West	8	242
New Goch	—	68
New Heriot	650	357
New Modderfontein	160	55
New Primrose	1,000	527
New Unified	1,225	344
Princess Estate	1	55
Randfontein Central ...	4,711	2,319
Robinson	1,210	595
Rose Deep	39	718
Simmer Deep	—	34
Village Main Reef	1,672	794
Vogelstruis Estate	—	573
West Rand Consolidated ...	38	752
Witwatersrand	30	1,597

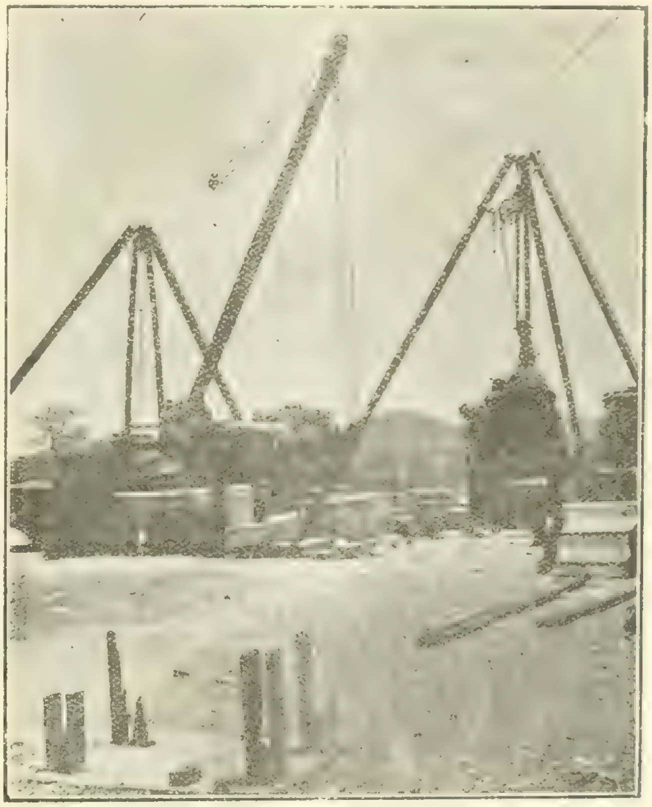
THE MESSINA COPPER COMPANY.

A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

II.—THE GEOLOGY OF THE MESSINA AREA. METHODS OF MINING ADOPTED. ORE RESERVES AND FUTURE POLICY UNDERGROUND.

In this article we should now, in addition to the gentlemen mentioned in our last issue, like to give credit to three officials of the Messina (Transvaal) Development Company, who have been prominently identified with the proposition, and to whom the Company is indebted for much of its present prosperity and bright outlook. To Mr. Charles Stuart, who since the inception of the company has been, and still is, the local representative of the company in Johannesburg, the Messina Mine owes a great deal. Mr. Stuart has been of inestimable value in furthering a successful policy on this side of the water, and his long experience in the financial world has in no small measure contributed to the present sound position. Mr. A. L. Chambers, a former Manager, of Messina, must also be credited with having carried out most excellent work at the mine. Mr. Chambers held the reins of management from October, 1905, *until* 1907, *and on his retirement the Chairman paid him a warm and well-merited tribute for the services he had rendered during a particularly trying time. In our last issue there appeared an interesting contribution by Mr. Chambers to the discussion evoked by Mr. Woodburn's paper, read before the Chemical, Metallurgical and Mining Society of South Africa on the Messina Mine. Mr. Chambers was succeeded by Mr. A. Fraser, who also did excellent work at a time when conditions were less favourable than they are to-day.*

The geology of the extreme northern portion of the Transvaal is of remarkable interest. Although the area in which the copper occurrences are found has not yet been investigated by the Geological Survey, the prospecting work that has been carried out there in the past few years has resulted in the accumulation of a considerable amount of data regarding the principal geological features of the district, but a great deal admittedly remains to be understood. The outstanding petrological feature is the gneiss, which is the most archaic formation as yet known in Africa and which has been termed by Dr. Voigt, "the fundamental gneiss." This consists in the main of micaceous, garnet and hornblende gneisses associated with epidote and gradations between granite and gneiss. The Zoutpansberg range of mountains to the south consists of sandstone of Waterberg age and outliers from this main belt of stratified rocks apparently run up to and flank the metamorphosed zone. At Liliput the present railhead of the Messina line, 25 miles from the mine, coal measures which are now being worked by the Messina Company occur. The country around Messina is intersected by a number of basic dykes—chiefly of gabbro, hornblende, basalt, and hornblende-gabbro, which have a general north-east and south-west line of strike. In the cupriferous zone the "country rock" consists in the main of gneiss and granite and alterations of the latter. The granites are of both the red and grey varieties, and the whole formation constitutes an igneous complex of great interest. The copper lenses are usually associated with decomposed felsite or quartz. The ores of copper found at Messina are:—Native copper (very rare), chalcopyrite, bornite or erubescite, chalcocite, malachite, azurite and covellite.



Erection of New Winding Engine, No. 5 Shaft.

THE LODES AND THEIR CHARACTERISTICS

To date three main lodes have been opened up and these are known respectively as the North, Middle and South Lodes. The line of strike is generally north-east and south-west, but in the western section of the mine, where a large gabbro dyke cuts across the formation the lenses exhibit a tendency

Messina No. 4 Shaft Headgear and Concentrating Plant.

to converge and the general appearance of the lodes seen on a plan from above is that of a broad arrow with the point of the arrow in contact with the gabbro intrusion.

The Shafts.

In the initial development of the Messina mine seven shafts were put down on the run of old workings. These were each sunk to the first level, and the earliest work as stated last week was disappointing, a considerable amount of driving and cross-cutting being achieved with very little exposure of ore. These seven shafts were located as follows: South lode, Nos. 1, 2 and 3; Middle lode, No. 4; North lode, Nos. 5, 6 and 7. No. 3 shaft was then sunk to the 2nd level and connected with Nos. 2 and 4 shafts, and good glance (or chalcocite) ore was obtained between Nos. 2 and 3 shafts somewhat to the north of the original drive at the 1st level. Near No. 4 shaft a little glance about 8 in. thick, was cut in the crosscut on the line of Middle lode, and on the line of North lode some good ore 2 to 3 ft. thick was exposed. This was driven on to the east, and about 400 ft. from the crosscut a wide mass of good pyritic ore and bornite, associated with felsite, was encountered. This mass proved to be about 90 ft. in length, and about 25 to 40 ft. in width. At the 1st level it was also found; and while stoping in this ore above the 1st level the ancient workings were broken into, and the ground ran from the surface and filled up the stope. Work was then stopped above the 1st level, and winzes were sunk and connected with the 2nd level, proving the ore to be continuous between these levels and of fairly uniform width and value. This mass was called the "Bonanza" and forms part of the North lode. The general dip of the lodes is to the south, and the angle of dip is high, from 70° to vertical.

North Lode and Bonanza Section.

The North lode constitutes the most important ore body opened up in the mine and merits first consideration. The total linear development effected to date has been about 1,500 feet on the second level, whilst a depth of 900 feet has been reached, and it is important to state that at this distance from surface ore of good value has been exposed, whilst the geological features are eminently favourable to a continuance of the ore body in depth. This North lode occurs as a series of lenticular masses running more or less in a uniform direction along the strike, but the connection between each mass is often difficult to follow. At one point the lode is from 3 to 4 ft. wide, and the walls are solid granite; then further on the lode widens out to 8 or 10 ft., and in places to about 20 ft., where there are two or three portions with granite "horses" between. In the Bonanza section the lode differs in character, the whole mass being mineralised throughout, and formed of irregular blocks of bornite and chalcopyrite cemented together with soft decomposed felsite, with occasional masses of quartz and altered granite. The " Bonanza " lode for the amount of work done has already proved itself to be one of the most valuable and heavily mineralised ore bodies in South Africa. Level after level has been opened out on this shoot, and whilst the width and value have been fairly consistent throughout there has been marked enrichment in places over a great width. On the fifth level, for instance, the shoot was opened for a lateral extent of 250 feet and a crosscut through the ore body at its widest point disclosed no less than 75 feet from wall to wall of an average assay of 19·5 per cent. metal. On the eighth level the lode splits into two portions, divided by a granite " horse " of ground. Here the hanging wall portion for a distance of 120 feet assayed 18 per cent. of copper, the greatest width exposed being 27 feet, whilst the footwall portion for a distance of 150 feet gave 13·7 per cent. copper with a width of 50 ft. of ore exposed at one point. In connection with the Bonanza lode it should be explained that this term is applied to a shoot formed by junction of an ore body known as the " No. 1 North " with the main North lode. The prospects of this ore body in depth are undoubtedly encouraging in the extreme. A crosscut put through the footwall portion of the Bonanza at a depth of 900 feet from surface has exposed the ore body for a width of 44 ft., assaying an average of 8 per cent. metal over the full width of this solid ore body. On the main North lode, of which, as already stated, the Bonanza is a portion, the ninth level has been reached by a winze about 200 feet west of the Bonanza shoot. The first 60 feet down from the eighth level assayed 8·5 per cent. copper over 60 inches exposed, and indications are still favourable below this depth. The Bonanza has thus far proved itself the mainstay of the mine as regards a concentrated body of high grade ore, but the other ore shoots opened up on the North, South and Middle lodes are in themselves ore bodies of great value and vast possibilities and they certainly possess excellent prospects of continuing to a very considerable depth. In depth the Bonanza section retains its characteristics, so far as developed, but both to east and west of this section the ore is generally associated with harder rocks; more quartz occurs, and the value of the ore is higher, more glance and bornite and less chalcopyrite being found. At the 3rd level, and for a few feet below it there is strong evidence of leaching having taken place in the Bonanza section, and there is a hard mass of what looks like fused ore with bornite associated with it. Immediately above this fused mass, there is solid chalcopyrite 12 to 15 ft. thick and about 50 ft. in length, the average value of which is 33 per cent. copper. At this 3rd level the Bonanza section is split up into two portions, called the footwall and hanging wall portions, and this continues to below the 4th level; but at the 5th level the space between the footwall and hanging wall, 80 ft. wide, as proved by a crosscut, is mineralised throughout in the centre of the mass, though east and west the two portions extend separately. From the 5th to the 9th level the two portions seem to diverge more noticeably.

Middle and South Lodes.

The Middle lode, which was found near No. 4 shaft, strikes towards the North lode on the west. It is more erratic than the North lode, carries principally high grade bornite and glance, and swells in places to fully 20 ft. in width, with granite between the masses of ore. At other places it is worked about 2 ft. wide. There is a dyke dipping about 40°, running at right angles across the lodes, which cuts through the Middle and North lodes at the 1st level near No. 4 shaft, at the 2nd level about 120 ft. to the west, and still farther to the west at the 3rd and 4th levels. The Middle lode is found on both sides of this dyke, and good values seem to follow the dip of the dyke, though generally 20 to 30 ft. away from it. Both the walls and the reef of the Middle lode are hard and strong, and in this respect quite unlike the Bonanza section. The South lode, found between Nos. 1, 2 and 3 shafts, runs roughly parallel with the Middle lode, though so far it has not been found immediately south of No. 4 shaft. This lode from the surface to the 4th level, exposed only glance ore of high value associated with quartz in hard granite walls. In places it consists of two parallel portions, each about 3 ft. thick, with 3 to 6 ft. of granite between. At other places there are small stringers of quartz and ore connecting the two parallel portions, and at these places the stopes have widened out to 12 or 15 ft.

Development and Ore Reserves.

It will here be of interest to state the amount of development work carried out to date on these various ore bodies, and also the tonnages of ore blocked out and in reserve. In all, the grand total of development work achieved in the mine up to the end of June last was 33,620 feet—including shaft sinking. Development results during the last financial year of the company—June 30, 1912, to June 30, 1913—have been attended with most gratifying results. The total footage driven, sunk and risen last year was 6,647 feet. Systematic sampling of the development work was carried out where copper values were exposed, and for 1,359 feet sampled the average value based on a width of 60 ins. was 10·9 per cent. copper. Notwithstanding the increased tonnage mined and milled—more than double the quantity for the previous year—the position of the ore reserves showed a substantial increase as is set out hereunder:—

	Tons.
Ore Reserves at June 30, 1912	170,000
Ore Developed during year	82,600
	252,600
Less Mined during the year	22,600
Total Ore Reserves at June 30, 1913 ...	230,000

The average assay value of this quantity is about 10 per cent. copper. Since the commencement of operations on the mine approximately 100,000 tons of ore have been extracted, and this tonnage added to the estimated ore reserves gives a total of 334,000 tons, nearly 50,000 tons per level for seven levels within the developed sections of the mine. This average has been well maintained down to the 5th level. Below this down to the 8th level about 25,000 tons per level have so far been opened up in the Bonanza section alone, and as lateral and vertical development progresses on the North, South and Middle lodes this tonnage will be increased.

The probable ore is estimated at 148,000 tons, that is, ore partially exposed and blocked out and reasonably assumed to exist within the proved areas. In this connection, the development at the 9th level is very satisfactory, and future prospects are distinctly encouraging. The possible ore is estimated at 100,000 tons down at the 10th level, *i.e.*, 1,000 ft. from surface. No allowance has been made for extension of the lodes east and west, beyond the extreme points of development drives. The continuous runs of ancient surface working clearly indicate the future possibilities in these directions.

DEVELOPING AND STOPING PRACTICES.

The methods of developing, mining and stoping pursued at Messina are very much the same as those pursued in base metal mines in other parts of the world. Naturally the nature of the deposit renders the practice prevailing in the Main Reef mines wholly unsuitable for the Limpopo copper beds. Indeed, it might be laid down as an axiom that the first essential to good mining work at Messina is to forget all that the Witwatersrand with its extraordinary uniformity has taught. At Messina the golden rule has been to follow the copper ore wherever it occurs, and it is the rigid adherence to this policy—within certain reasonable limits—that has brought the mine to its present state. There has been no fantastic deep sinking to cut unproven ore bodies in depth, and the experience gained by the management in the past will certainly be most valuable in the guidance of their future policy. In a mine of this nature development is largely of the nature of prospecting, especially in the upper levels, and values are followed wherever found until they disappear; then the drive is continued on the general line of strike, or toward another lenticular mass intersected at a higher level. Before deviating from the line of strike, care is taken to follow any cracks or fissures showing red or green stainings, which are good indications of the proximity of the lode. The presence of water, too, is often a valuable indicator of mineralised matter. When these indicators are followed and nothing of value is disclosed, crosscuts are put in at intervals, or winzes are sunk from the level above at points where good ore exists, and should the values leave the winze, crosscuts are put in to follow up the ore. As each level gives additional information regarding the general trend of the shoots, or masses, it becomes easier to drive the lower levels on more definite lines. When the lode is hard and not too wide, levels are driven in the lode; but in the Bonanza section the 4th level has been driven off the lode in the hanging wall, and this section has been opened up by crosscuts through the reef. For stoping and permanent work this is the best method; for at the 2nd and 3rd levels, where the main drive was in the reef, it was found necessary to put through additional drives in the hanging wall, to pass this section, as the timbering required frequent repairs, and the roadway became narrow and low and unsuitable for tramming. In the South and Middle lodes, and at other portions of the North lode, the drives have been carried in the lode, though the main drives at the 4th, 6th, and 8th levels are kept as straight as possible for the sake of tramming. It is a constant question whether to keep a drive straight, or allow it to follow the bends of the lode, and much depends on the knowledge of the section under development which method is adopted, though every effort is made to prevent the drive from becoming too tortuous. Although, as has been said, development in the upper levels naturally assists in directing development in the lower levels, it frequently happens that changes take place so suddenly in both strike and dip that only by stoping out a portion of the lode can the necessary knowledge be obtained by which to direct development at the lower levels. In the narrow portion of the lodes either underhand or overhand stoping can be carried on, and timber stulls put in for the boys to work on. If underhand stoping is done it is started from the top of a winze and the ore shot down to the level below. Where a lode widens to 15 or 20 ft. underhand stoping, even in hard ground, may become dangerous, as portions of the wall tend to flake off, especially where small stringers pass into the sides and form false hanging. With overhand stoping, timber stulls can be relied on up to 6 or 8 ft. in width, but should the lode widen to 10 or 20 ft., then the whole stope is cleaned out, and filled in with waste right up to the face, which enables the wide lode to be taken out successfully, and sent down through cribbed ore passes to the level below. Waste rock for filling the stopes is obtained from the surface, and also from development drives on the upper levels. One small shaft, called the air winze, was down to below the 1st level in the footwall at the west end of the Bonanza section. This was continued to the 3rd level, and a winze sunk to the 4th level was practically underneath this shaft, so that waste rock from the surface dump can be sent down directly to the 4th level, or taken off at any upper level and distributed to any stope. From the 4th to the 8th level waste rock from development will be used, and rock from surface can also be lowered below this level where necessary. This air winze is only timbered for about 30 ft. from surface, and is in solid granite below this point, so that few repairs are necessary. The top of this shaft at surface is alongside the waste tram road to the dump; it is very convenient as a chute for waste rock.

THE NEW SHAFT.

A highly important feature of present operations at Messina is the sinking and equipment of the new No. 5 shaft. No. 3 shaft, which is down to 3rd level, had been timbered with round bush timber, and, when the question of further sinking was considered, it was thought advisable to enlarge No. 4 old shaft (a two compartment shaft down to 2nd level) and sink it to 800 ft. The North and Middle lodes, including Bonanza section, so far account for three-fourths of the developed ore, and No. 4 shaft was more convenient for these lodes, and was also at the highest level on the surface, and thus most adaptable for delivering ore to any new reduction plant. This No. 4 shaft was only intended to replace No. 3. It is a three compartment shaft, each compartment being 4 ft. by 5 ft. 6 in. in the clear, and timbered with 8 in by 8 in. pitch pine for two sets above and below each level, and 6 in by 6 in. at other sets. The guides are 6 in. by 4 in. pitch pine; and cages are run in the shaft, capable of carrying 20 cu. ft. trucks. At the surface and at the 4th and 6th levels landing dogs are fixed in the shaft for the cage to rest on, and the skipman is responsible for seeing that these dogs are open before he takes the cage to a lower level. When the development in the mine improved, and the prospect of a larger tonnage was assured, the question of a second shaft arose, and it was decided to sink a new No. 5 shaft 50 ft. to the west of No. 4, and of practically the same dimensions, each compartment being 4 ft. 6 in. by 5 ft. 6 in. in the clear. The sinking of a new twin shaft was decided on in order to concentrate boiler equipment, etc. By sinking the twin shafts all ore and water can be brought to and the underground workings will be accessible from either shaft. This new No. 5 shaft is now being equipped with a direct acting Corliss winding engine with 8 ft. drums, with a capacity of 7 tons from 2,000 feet. There will also be erected a 72 ft. steel headgear. The immediate policy of the company embraces sinking to a depth of 1,000 feet, and this will be achieved and the 10th level opened out in a month or two from date. Thereafter deeper levels will be opened out with a view to following the ore shoots down. The outlook for the maintenance of widths and values in the lodes at depth is, so far as can be judged at present, a good one. Messina can to-day claim the distinction of being one of the deepest base metal enterprises, if not the deepest base metal enterprise of the African continent, and the time is not far distant when still greater depths will be probed in the Limpopo copper belt. The miners of long ago who could go no further than water level and who carried up the ore on their backs in baskets have been displaced by men who can command modern pumps and winding engines capable of hauling seven tons from a depth of over a third of a mile. Thus has the ancient industry of copper working in the extreme Northern Transvaal been revolutionised.

THE YEAR WITH THE MOZAMBIQUE COMPANY.

Review of Finances—Mining Progress in the Territory—Rubber Receipts.

The report of the Mozambique Company for the year ended 31st December last, submitted to the meeting at Lisbon on the 31st ult., states that the available funds at 31st December, 1912, including cash at bank, amounts on loan, deposits at the banks and Treasury bonds, amounted to £412,165, of which £43,880 was in Africa and £368,285 in Europe. The financial position of the company continues, therefore to be sound. The result of the financial operations for the year 1912 in Africa and in Europe shows a credit balance of £43,520. Deducting from this sum £391, the balance of amounts carried direct to profit and loss account, there remains a net profit of £43,128. Comparing the results of the financial operations of 1911 and 1912, there was in this latter year a falling off in the excess of receipts over expenditure of £12,216. Had it not been for the decrease in the profits realised from the collection of rubber and from the taxes thereon amounting to £11,665, and had the native taxes for 1912 been paid in that year, instead of £9,624 having only been recovered in 1913, as has been the case, the above decrease would have been replaced by an increase of £9,073. The falling off above referred to is attributable solely to the great drought of 1912. The collection of rubber, which constitutes the most important of the company's direct exploitations, has, in consequence, amounted to almost nil, while the famine which has affected the native population in different parts of the territory has caused the delay above referred to in the collection of the poll and hut taxes. All the other administrative receipts, and which form the best indication of the economic development of the territory, have continued the upward movement evidenced in previous years, notably in 1911. The total receipts collected in 1912 were £228,524, as against £240,345 during the previous year, or a decrease only of £11,821, notwithstanding the falling off in the receipts from rubber and the delay in the collection of the native taxes. As has already been stated, there is a very considerable increase in those receipts which constitute the most certain indication of the economic development of the territory, such as the receipts from the Customs, port dues, land taxes, licences, industrial taxes, registration taxes and stamps. The falling off in postal receipts is the result of the unusual sales of stamps bearing the surcharge "Republica" which took place in 1911. The profits realised in 1912 being insufficient to allow of the distribution of a dividend, the board considers that it is preferable to strengthen the position of the company by devoting an important part of those profits to depreciations. From the surplus to be dealt with 5 per cent. will be placed to reserve and an amount of £27,016 for depreciations, the balance of £13,926 being carried forward.

Mining Progress.

The following figures give an idea of the mining operations in the territory during the past year:—Value of gold produced, £10,111 14s. 2d.; value of silver produced, £69 19s. 0d.; total, £10,181 13s. 2d. Licences and certificates delivered by the Office of Mines:—Prospecting licences, 74; other licences, 31; registrations and transfer certificates, 52; inspection certificates, 59. Staff employed by the mines during the year:—Whites, 379; Asiatics, 72; blacks, 6,975. On the 31st December concessions existed for 1,792 gold reef claims, 678 alluvial gold claims, and 204 copper claims, making in all 2,675 mining claims. There were 75 stamps on the gold claims, and on the copper claims 3 pneumatic stamps and a Chilian mill. There are at present 6 properties being worked, of which two—the Bragança (belonging to the Andrada Mines), and the Guy Fawkes, may be considered as of considerable importance, while the remaining four are as yet in the prospecting stage. The year 1912 has continued to be for the Andrada Mines, Ltd., a year of study, examination and prospecting. If the Braganza lode, on which all the reef work carried out by the company has been concentrated, has not realised all the hopes which were entertained a year ago, the alluvial deposits on the other hand appear to contain a considerable amount of gold. A powerful dredger, ordered in the United States in 1912 and delivered in 1913, is now on the spot, and partly erected; it will start work at the end of this year, and it may be hoped that the company will enter in 1914 into the producing period with payable results. The geological survey of the territory has continued during the past year, under the direction of Professor Wyndham Dunstan of the Imperial Institute.

Industrial Progress.

The Sena Sugar Factory, Limited, the Rhodesia Cotton Company, Limited, the Busi Company, the Beira Rubber and Sugar Estates, Limited, and the Luabo Company have continued to develop their agricultural and industrial concessions. The first of the above-mentioned undertakings produced in 1912 8,046 tons of sugar, and the Compagnie Colonial du Buzi 1,700 tons. In view of the advantages which territories offer for the cultivation of sugar cane, capitalists are at present studying the establishment in the territory of the sugar industry on a very large scale. The Luabo Company and Busi Company have distributed a dividend of 7 per cent. and 5 per cent. respectively in respect of their last completed accounts. The native labour department, which was created in July, 1911, has continued to work well during the past year. The recruiting of labourers on a large scale has been carried out quite smoothly, and all the expenses of the new service have been covered by the receipts.

Treasury Gold Mines to Liquidate.

In a circular to shareholders, the secretary, Mr. H. G. L. Panchaud, writes:—"The Chairman in his speech at the annual general meeting of shareholders, held on the 29th August last, explained the position of the mine, and indicated the probability of calling shareholders together to place the company in voluntary liquidation. I now beg to hand you a notice convening an extraordinary general meeting of shareholders, to be held on the 9th January, 1914, for the purpose of passing the necessary resolutions, which, if adopted, will be submitted for confirmation at a further extraordinary general meeting on the 31st January, 1914."

POSITION OF THE NATIVE RECRUITING CORPORATION, LTD.

Review of the Year—Mr. C. W. Villiers on the Outlook.

At the first ordinary general meeting of the Native Recruiting Corporation, Ltd., Mr. C. W. Villiers, the chairman, in moving the adoption of the report and accounts for the year, said: As you are aware, this Corporation took over the recruiting agencies of all the gold mining groups on the Witwatersrand, with the exception of the Robinson group. The actual decrease in recruiting costs has so far not been very marked as compared with the average cost for all the groups' organisations, but on the other hand it must be borne in mind that had the Corporation not come into existence, the cost of recruiting would undoubtedly have been further increased owing to competition. A schedule of wages for natives has been agreed on and is adhered to by all the members of this Corporation. The total number of natives recruited by the Corporation in British South Africa during the nine months under review was 51,586, an increase of 11,483 natives as compared with the number recruited by the various group organisations for the nine months, 1st October, 1911, to the 30th June, 1912, which must be considered quite satisfactory. The largest increase has taken place in the supply from the Cape Province. In addition to the natives recruited by the Corporation, 12,713 British South African natives were recruited by contractors and 33,053 natives were supplied by the Witwatersrand Native Labour Association from Portuguese territories, of which 11,473 natives were from tropical areas. Natives to the number of 26,851 came direct from their homes to engage voluntarily on the mines, and 24,644 local natives either changed from the employ of one mine to another or left other employment to work on the mines, making a grand total of 148,790. The total number of natives actually distributed to the mines was 148,420, the balance of 370 being accounted for by natives rejected as medically unfit by the Medical Officer at the Government Native Labour Bureau. Unfortunately, since the 30th June the labour force has been considerably depleted owing to unrest among the natives as a consequence of the strike among the white employees on the mines, which took place early in July. From the 1st June to the 30th September there has been a reduction in the number of native labourers employed by members of 37,319. For all gold mines during the same period the reduction was 45,007, and for the whole mining industry 47,732 as compared with a decrease for the whole mining industry during the period from 1st June to 30th September, 1912, of 5,985. After touching on the recent strike and its effects, Mr. Villiers continued: The present position of the native labour supply is most unsatisfactory, but I think we may look forward to a considerable increase in the numbers coming at no distant date. Every care has been taken to reassure the natives in their homes as to the industrial position on the Witwatersrand, and, provided there is no further disturbance, I feel sure that the natives will shortly come forward to work the mines in large numbers. I am glad to say that during the last few months the mortality among the tropical natives has been very materially reduced, and every effort is being made to effect a still greater reduction. The loss of the tropical labourers will be a very serious one for the mining industry, and it is difficult to say from whence the deficiency will be made up. No effort will be spared to endeavour to increase our labour supply from British South Africa, but, taking into consideration the prospects of a good agricultural season and the heavy demands made by other employers on this class of labour, we cannot prophesy with any degree of certainty if or when this deficiency will be made up from British South Africa.

CHANGES IN AND ADDITIONS TO MINE REGULATIONS.

Brief Summary of the Revised Rules.

A SUPPLEMENT to last week's *Government Gazette* contains the long-expected additions to and changes in the Mining Regulations. Altogether there are some hundred and seventy to a hundred and eighty amendments and alterations in the law. Apart from those applying to coal and diamond mines, the most important changes are the strengthening of the law in dealing with the causes of miners' phthisis arising from the dust and fumes caused by blasting. There are amendments to the conditions of underground contract work, which provide that the late form of agreement now contains the proviso that no alteration to prices and charges set out in the contract shall be made, except by mutual consent, unless twenty-three days' notice of the proposed alteration be given by either party to the agreement. The Minister of Mines has seen fit to constitute a Board of Examiners for the issue of blasting certificates in lieu of the present system, which, in brief, is that the manager of a mine can issue a provisional blasting certificate, to be subsequently exchanged for a permanent certificate by the Inspector of Mines, or the miner can obtain a certificate directly from an inspector provided he satisfies the official of his competency. The cost of a blasting certificate to the miner has heretofore been 5s. The amendments, with regard to blasting, of Regulation 106 are entirely new, and for the first time a definition is given of the meaning of the term "water blast," which is in the interpretation of terms stated "shall mean a continuous spray of water projected by means of compressed air." The new regulations which now become part of Chapter IX. (Duties of Gangers Blasting, etc.) of the 1911 Act 106 (32) and 106 (33) to be renumbered (35) and (36) respectively, and in their place to be substituted Nos. 32, 33 and 34 read (32). The person in charge "shall not enter nor allow any person to enter any end, raise, winze or other close place within less than thirty minutes after putting the water-blast in action, and then only if the air is free from dust, smoke and fumes perceptible by sight, smell or other senses. "(33) Shall only blast at the end of the shift except where necessary and then only with the permission of the mine overseer or shift boss." "(34) Shall in all development faces at every mine included in the list of mines framed under section 2 of Act No. 19 of 1912 (except in the case of a winze being worked on single shift) immediately after lighting up put into action the water-blast which he shall previously have tested. If as a result of such test the water-blast shall be found to be not in order no blasting shall take place."

The reform in the matter of the contractor's agreement, which requires, in case of an alteration, a month's notice on either side, except by mutual consent, is not expected to mean much, because where dissatisfaction prevails the carrying out of the work can be made so uncomfortable on either side that the terminability of a contract will almost without exception follow the lines of present practice.

An innovation which may bear heavily on some mines is the amendment to Regulation 158 (clause 6), which now provides that an adequate and constant water supply, clear and odourless, shall be laid on to every working place not naturally wet and sufficient for effectively wetting broken ground and preventing the formation of dust. The point of the amendment lies in the requirement that "such water shall be supplied in metal pipes not less than one inch in diameter at a pressure of not less than 30lb. to the square inch at each working place, when all sprays and jets supplied from the same pipe are working. The new regulation also requires that a sufficient length of hose shall be provided, to connect the pipe, which shall not be more than fifty feet from the working face.

Crown Diamonds.

The following was the result of operations for October at the Crown Diamond mine:—Washed, 15,519 loads, yielding 1,559 carats, an average of 10·04 carats per 100 loads. Washing operations were hampered during the early part of the month by rain.

New Eland Diamonds.

The washing results for October were:—Number of loads washed, 12,400; diamonds found, 1,813 carats; percentage, 14·62. Recovered from sortings re-treated through the pulsator: Loads re-treated, 50½; diamonds recovered, 199 carats. Total recoveries for October, 2,012 carats.

Sheba G.M. Co.

Operations at the Sheba mine for the month of October resulted as follows:—5,750 tons crushed, yielding 3,285 ozs. of fine gold; estimated profit, £4,156.

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For those holding Government Certificates in Mining and Engineering. Private Individual Tuition and Correspondence Lessons for all Branches. Miners now need no Shift-bossing experience to sit for Mine Captain's Examination.—E. J. MOYNIHAN, Consulting Engineer, Cuthbert's Buildings, Pritchard Street, P.O. Box 2061.

SWAZILAND TIN OCCURRENCES.

Embabaan and Forbes Reef Deposits—Mr. A. L. Hall's Geological Reading.

AT the last meeting of the Geological Society of South Africa an interesting paper, entitled "Notes on the Tin Deposits of Embabaan and Forbes Reef in Swaziland," was read by A. L. Hall, B.A. The paper was communicated by permission of The Hon. the Minister for Mines. In the course of his communication, Mr. Hall stated: The tin deposits of Swaziland are of exceptional interest to the geologist, since their mode of occurrence, notably that of Forbes Reef, presents certain novel features, unlike those usually met with among the better known South African deposits. Two main tin-bearing districts can be recognised in north-western Swaziland; the one consists entirely of alluvial occurrences and embraces Embabaan with the surrounding country, including the lower-lying district round McCreedy's Tins, some ten miles further south; in this belt of country the tin is associated with granite only. The other district lies on the eastern side of the Ingwenya Range, round Forbes Reef, and comprises occurrences associated both with granite and with schists.

TIN OCCURRENCES ROUND EMBABAAN.

Embabaan itself and the surrounding district for many miles is typical granite country, intersected by occasional dykes of comparatively recent age, with an average elevation of about 4,000 feet above sea-level. It is very well watered and deeply dissected, the prominent granite kopjes and ridges being separated by long conspicuous vallesy. There is a close general resemblance to the type of country associated with the Woodbush Mountains on the eastern slopes of the Drakensberg, near Haenertsburg. Probably the granite of Embabaan belongs to the Older Granite formation of the Eastern Transvaal. The very favourable hydrographic conditions, combined with the well-defined and vigorous drainage system, have much facilitated an effective concentration of the cassiterite and other heavy constituents of the granite along the numerous water-courses, of which the Babaan River is the most important. The name "Flats" is locally applied to those points where the floor of the valleys widens out to form more extensive and fairly level ground, either along the main stream or at its junction with a tributory; it is on such "Flats" that some of the earliest tin-workings were carried out in a somewhat primitive manner, and are continued at the present time under more scientific conditions. Along the Babaan River itself are situated King's Flat, below the Residency, Ryan's Flat—practically in the village itself, and Babaan Flat, about half a mile further down stream. Besides these, a number of other alluvial deposits have been located along several streams further away, such as Stable Creek, on the Bremersdorp Road—some five miles from Ryan's Flat, and about 1,600 feet lower—and Sander's Creek, higher up among the hills of Embabaan. The various alluvial deposits present essentially the same geological conditions as regards mode of occurrence, though there are certain differences in the nature of the cassiterite and the character of the associated minerals.

The Embabaan Tin belt is well known for the variety and abundance of *accessory minerals* accompanying the cassiterite. Enumerated in approximate order of abundance, these are: Monazite, iron ores, euxenite, corundum and tourmaline. Monazite occurs abundantly at King's Flat, but is much less common along the Hill creeks; it commonly forms badly-defined clove-brown crystals, averaging about a quarter of an inch across, though larger irregular individuals are occasionally found up to one and a half inches in length with poorly developed facets. Among the iron ores magnetite is very common, especially at King's Flat and Stable Creek, where the cassiterite occurs in much smaller crystals, while at Sanders Creek, where the tin-ore is very coarse, magnetite is scarce, so that some connection appears to exist between the fineness of the cassiterite and the abundance of iron-ore, partly due no doubt to the more effective concentration along the Babaan River. The mineral usually referred to as euxenite is fairly common at King's Flat, where it occurs in small irregular blackish crystals with badly developed facets, bluish-grey on the weathered surface, but on a fresh fracture almost black, with a sub-metallic or resinous lustre. The great majority of these are about a quarter of an inch across, but one also finds isolated larger lumps as much as one inch in diameter. The identity of this mineral with euxenite is very difficult to establish, but there is no doubt that it belongs to the aeschynite group, which comprises the four minerals aeschynite, polymignite, euxenite and polycrase, all these four minerals being complex niobates and titanates of the cerium metals, polymignite containing a notable amount of zirconium, while euxenite and polycrase contain uranium, so that in the absence of crystals with good facets a satisfactory determination is not possible. Corundum occurs in fairly well-defined dark greyish-brown crystals up to one and a half inches in length and often exhibiting the familiar barrel shape, but larger crystals are occasionally found, as much as three inches across—especially at Sanders Creek. Although no definite lodes *in situ* are seen, there can be no reasonable doubt regarding the *source of the cassiterite.* The intimate association with granite and the occasional occurrence of cassiterite-bearing quartz point to the conclusion that the ore is derived from pegmatites belonging to the Older Granite formation. Moreover, below Inyonyan near the Bremersdorp road and still in the same granite country the cassiterite occurs *in situ* in undoubted pegmatite veins.

TIN OCCURRENCES AT FORBES REEF.

Forbes Reef is situated some fourteen miles north of Embabaan, close to the western boundary of Swaziland, which here roughly coincides with the crest line of the Ingwenya Range, a long and conspicuous mountain ridge made up of quartzites and schists of igneous origin belonging to the Swaziland System. Along the crest line of this chain two very thick quartzites are clearly recognisable with a dip towards the east of about 60 degrees. The eastern slopes and the low-lying ground to the east are made up of a great thickness of very soft talcose, chloritic and calcareous schists, conformable with the underlying quartzites. These schists are succeeded by granite which is continuous all the way from Embabaan to Forbes Reef. It is practically certain that at the latter locality the granite is intrusive in the schists, and the proof of this relationship will be fully given elsewhere, while there is little doubt that the tin is derived from the granitic magma. Within the belt of schists, which begins immediately west of the old Main Reef workings at Forbes Reef, cassiterite has been found in two forms, both as reef tin. In the one case the ore is found in a vein of igneous origin, in the other the cassiterite crystals are embedded in the schists themselves; these two modes of occurrence may be conveniently referred to as—(*a*) Tin in "granite" and (*b*) Tin in schists.

(*a*) *Tin in Granite.*—Within the schist zone and about one mile from the contact with the granite, a reef has been located and followed for a distance of about a hundred yards, cutting obliquely across the strike of the schists. It is from two to three feet wide and at the surface very badly defined against the country rock, though in samples from the deeper workings a fresh contact can be observed. The reef itself consists almost entirely of fresh, white felspar with small irregular patches of dark greenish-grey chlorite, and contains crystals of brownish-black slightly resinous cassiterite in isolated scattered blobs up to the size of a florin, or in elongated streaks. It is in sharp contact with a dark greenish chloritic layer from two to six inches wide, which shades off into the soft schist of the country. The amount of cassiterite is small near the surface, but appears to increase with the depth. There is little doubt of the igneous origin of this reef, and its mode of occurrence suggests a derivation from the intrusive granitic magma, possibly as a form of pegmatite, though its general characters are not quite like the usual granitic pegmatite. It may be pointed out that at various localities within the belt of schists and at the same horizon as the tin lode, tourmaline and staurolote are abundant. Isolated from the matrix, the crystals of cassiterite present very distinctive characters, since they are very badly defined and show highly irregular pitted surfaces, not unlike clinker. In this respect there is a striking difference as compared with the well-formed crystals of cassiterite belonging to the "Tin in Schist" mode of occurrence.

(*b*) *Tin in Schist.*—Close to the above described occurrence of reef tin, but a little further into the belt of schists, there are several fissures running roughly parallel with the strike; along them—over a width of about three inches—the schist matter is tin-bearing, while very little or no tin is found away from the fissures. One of the latter is well seen in a long trench, which shows the country rock dipping to the west, and is traceable all along the trench. The fissure itself consists practically of the same material as the country, and appears merely as the well-defined outcrop of a plane of discontinuity in the body of the schists, though in places it becomes less clearly marked. In the adjoining creek sluicing operations have been carried out down to bedrock, and the cassiterite thus obtained is clearly derived from the underlying schists by weathering and gradual concentration. Some of the fissures can be traced in the bed of the creek itself and at several points larger crystals of cassiterite occur *in situ* in the schists, not obviously connected with the distribution of the fissures. No quartz gravel occurs, but the overburden rests directly on the schists.

The character of the ore in the schists differs markedly from that occurring in the granitic veins, the cassiterite forming very coarse crystals with good outlines, while ruby or resin tin is common. Unlike the Embabaan occurrences none of the characteristic accessory minerals are found at Forbes Reef.

The best "Reef Traveller" is the *South African Mining Journal.*

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KNIGHTS DEEP.

An Abnormal Year—Dividends, Ore Reserves, and General Outlook.

The fifteenth annual meeting of shareholders in the Knights Deep was held in the board-room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, this week. Mr. F. D. P. Chaplin presided, and there were also present Messrs D. Christopherson, C. Hely Hutchinson, A. R. B. Parnell, W. S. Smits, A. G. Gill, D. W. Rossiter, F. M. Cowan, and J. D. Low, secretary.

There were represented personally and by proxy 567,509 shares, out of an issued capital of 743,526 shares.

The Chairman said: You will remember that at our last ordinary general meeting I detailed the arrangements made with the Consolidated Gold Fields of South Africa, Ltd., with regard to the working and possible purchase of the property of the Simmer and Jack East, Ltd., in liquidation, and informed you that as from the 1st of October, 1912, that property together with our own had been worked as one in terms of the agreement made. You will also remember that at the extraordinary general meeting held on the 24th January last, a report of which is now before you, your directors were empowered to exercise, if they thought fit, the option given by the agreement and to complete the purchase of the Simmer East property. This option was duly exercised at the end of June last and the capital of the company increased by the creation of 93,526 new shares, which, together with 6,474 shares in reserve, were handed to the Consolidated Gold Fields of South Africa in terms of the agreement, being taken by that company at the price of 50s. per share. You will see, therefore, that during the first two of the twelve months now under review the old Knights Deep property was worked as a separate unit, that during the following nine months these two properties were worked on joint account, two-fifteenths of the total profit obtained being payable to the Consolidated Gold Fields of South Africa, Ltd., and that during the last month of the financial year the combined property was worked as one for the benefit of the Knights Deep Comapny. Exact comparison with the results obtained during the preceding financial years is, therefore, impossible. You will see, however, that the total working profits which accrued to your company in respect of these twelve months, after deducting expenditure on renewals and replacements of machinery, plant and buildings, was £151,376, and that two dividends of 10 per cent. and 12½ per cent. respectively, were declared in December, 1912, and June, 1913, which is less by 5 per cent. than the amount distributed during the previous year.

REVIEW OF THE ACCOUNTS.

Turning to the balance sheet, you will see that the issued capital has been increased, as above explained, by the issue of 100,000 shares, and now stands at £743,526, and on the other side property now stands at £324,682, an increase of £43,000, representing as to £40,000 the portion of the proceeds of the 100,000 additional shares, viz., £250,000, allocated as the cost of acquiring the claims and mynpachts of the Simmer and Jack East, Limited, in liquidation, and as to £3,000, transfer duty paid on the transfer of the property. In this connection I may explain that of the £250,000 resulting from the issue of the 100,000 shares at 50s., £241,963 has been taken as the purchase price of the fixed assets, including the claims and mynpachts taken over from the Simmer and Jack East, while the balance of £8,037, which was the portion of the purchase price allocated to stores, investments, etc., taken over has been used to replace amounts previously appropriated from revenue for capital expenditure. Of the £241,963 representing the purchase price of the fixed assets of the Simmer and Jack East, in liquidation, £40,000 has, as already stated, been allocated as the cost of the Simmer and Jack East claims and mynpachts, and the balance of £201,963 has been allocated as the cost of the equipment, machinery and plant taken over, expenditure on which now stands at £1,140,490, an increase of £197,055, as against last year's figures, the difference between £197,055 and £201,963, viz., £4.908, being due to the fact that though additional expenditure on equipment has been incurred, amounts exceeding this by £4,908 have been written off during the year in respect of depreciation and sales of plant. The fund for additions to and renewals of machinery, plant, and buildings, you will see, stands at £4,194. During the year a good deal of expensive work had to be carried out, particulars of which are to be found in the manager's report, and as the fund in consequence required money, some of the shares of the Breyten Collieries, Limited, previously earmarked as an investment for the fund, have been transferred to the company's account, releasing some £2,900 for the purposes of the fund. Investments otherwise show no change of importance. Further debentures to the amount of £23.500 were redeemed during the year, the amount outstanding of the original issue of £400,000 being now £70,600. You will see, therefore, that in three years' time the whole liability will have been extinguished.

YEAR'S DIVIDENDS.

As I have already indicated, owing to the reduction of the profits earned, it was only possible to distribute during the year dividends to the value of 22½ per cent., as compared with 27½ per cent. during the previous year. The reduction in working profit as compared with the previous year, exclusive of the difference on expenditure on renewals and replacements of plant which is provided out of the renewals fund, amounted to £45.700. Broadly speaking, this reduction is due to the destruction of the crusher station by fire in August, 1912, as the result of which the working profit for that month and the month of September, 1912, was reduced to £18,880, or some £15,250 less than might otherwise have been made in those months; and to the fact that in July last, owing chiefly to the strike and, to some extent, to the change over then effected to the new tube mill plate amalgamation system, the operations at the mine showed a loss of £7,760, as compared with an average profit during the preceding three months of £21,500. It will be seen that these causes account roughly for £44,510 of the total decrease of £45,700. Sundry revenue this year, including the amount recovered under the company's profit insurance policy in respect of the burning of the crusher station, came to £16,194, an increase of £7,829. Profits tax estimated and debenture interest and expenses were together less by £10,139, while, on the other hand, we had this year to meet expenditure incurred in connection with the strike, including insurance, etc., £5,222, and contribution to Miners' Phthisis Compensation Fund £5,975, the result being a total net profit of £142,770, as against £201,830.

WORKING COSTS REDUCED.

As regards the operations for the year, though for the reasons already given exact comparison with the results of the previous year is impossible, it is satisfactory to be able to state that our expectations as to a reduction in the average working costs of the Knights Deep and Simmer and Jack East properties, following the adoption of combined working, have been realised, the average for the ten months beginning October 1st, 1912, having been 11s. 2.459d. as against 12s. 7.099d. per ton for the year ended the 31st of July, 1912, during which the two properties were worked separately. The actual tonnage milled was 1,117,121 tons, of which 107,391 was milled by the Knights Deep alone during the two months preceding the adoption of joint working, and 1,009,730 during the remaining ten months of the year. During the preceding twelve months, when the two properties were worked separately, the tonnage milled was—Knights Deep 727,700, Simmer and Jack East 307,700, or a total of 1,107,400 tons. You will remember that last year you were informed of the proposed increase of the crushing capacity to 103,000 tons per month, to be subsequently further increased to 108.000 tons per month. It was estimated that the greater part of the cost of this increase would be provided out of the insurance money received in respect of the old crusher station burnt, and partly out of the proceeds of the gold to be recovered from the old mill plates. Up to the present gold to the value of £8,490 has been recovered from this source, and it is estimated that about £500 more will be forthcoming. The experience gained by working on the larger scale caused our engineers to take the view some months ago that even better results would be obtained by increasing the crushing capacity to 120,000 tons per month, and with some slight addition to the plant previously authorised and at a moderate expense this has recently been arranged, and had it not been for the strike and consequent dislocation and shortage of native labour we should be crushing to-day at this rate. Owing to these causes, however, it was only possible to crush in August 105,000 tons and in September 97,900. This month a slightly higher figure will probably be reached. As soon as the labour supply becomes normal—we have now only 58 per cent. of our underground complement—there seems no reason to doubt that an appreciably higher rate of profit will be obtained. It must be remembered that not only are the costs affected by the lower tonnage, but the scarcity of labour has made it necessary to mill a much larger proportion of reclamation rock than would otherwise have been done; the proportion milled during the months of August and September having been 54.51 per cent. and 55.1 per cent. of the total tonnage of ore crushed. This rock is easily and cheaply mined, but its value is appreciably below the average value of the ore reserves, in which, I may explain, it is not included.

ORE RESERVES.

As regards the ore reserves, you will see from the report of the superintending engineer that the fully developed payable ore reserve at the 31st of July was estimated at 2,777,000 mine tons of an average grade of 4.3 dwts., together with 259,000 mine tons of partially developed ore of an average indicated grade of 3.7 dwts. As I have stated, this reserve does not include the large tonnage of reclamation rock, and, as was explained last year, the actual development work to be done, except in the technical sense of the words, is comparatively small. We have an immense amount of ore of a low average grade which can be cheaply mined, and given an adequate supply of native labour enabling the plant to be run to its full capacity, there is every reason to expect satisfactory profits. The results for the current half-year will, of course, be greatly affected by the untoward circumstances already described and a reduction in the dividend to be declared at the end of the year is inevitable. It is to be hoped that during the next few months the labour position will become normal, and in that case there should be a corresponding increase in profits and dividend during the ensuing half-year. During the year under review the property has again been in charge of Mr. G. A. Chalkley, and the directors are glad to have this opportunity of expressing their appreciation of the efficient manner in which the work has been carried out by this gentleman and his staff. I now beg formally to move the adoption of the report and accounts and the confirmation of the action of the directors in electing to retain for this company the assets purchased from the Simmer and Jack East, Limited (in liquidation), and in creating 93,526 new shares and the issuing thereof, together with the 6,474 reserve shares, as fully paid up, in payment of the loan of £250,000 from the Consolidated Gold Fields of South Africa, Limited, to this company.

The resolution was adopted unanimously.

The appointment of Mr. F. Leslie Brown as a director of the company in the place of Mr. E. A. Wallers, resigned, was confirmed, and the two directors, Messrs. D. Christopherson and E. Birkenruth, who retired by rotation, were re-elected. The temporary appointment of Mr. P. Whiteley as one of the company's auditors during the absence of Mr. Thomas Douglas was confirmed, and Messrs. Thomas Douglas and Charles Stuart, the retiring auditors, were re-elected for the current year, and their remuneration in respect of the past year's audit was fixed at 175 guineas each. The meeting then terminated.

THE OCTOBER OUTPUT: GROUP RETURNS.

Continued Shortage of Labour Affects Returns.

Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of October.

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep	300	7	59,700	16/ 3	17,174	£23,485
Geldenhuis Deep.	300	7	48,800	24/ 4	16,248	8,811
Nourse Mines ...	260	7	49,800	20/ 9	17,032	19,679
Ferreira Deep ...	245	7	52,910	18/ 8	23,906	50,754
Crown Mines ...	660	26	175,000	15/10	59,980	113,306
Durban Rood. D.	100	3	22,320	25/ 2	7,604	3,799
Totals & averages	1865	57	408,530	18/ 5	141,944	£219,834

Crown Mines, Limited.—The company is suffering severely from labour shortage, the underground force having fallen from 13,311 on the 20th March last to 8,416 on 20th October, a loss of 4,895 natives, or 36·77 per cent.

The following are the results of crushing operations of Central Mining companies for the month of October:—

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Modder B.	80	5	37,250	15/ 9	17,795	£45,309
New Modder	180	7	40,000	17/ 6	19,626	47,238
City Deep	150	9	37,200	26/ 7	16,859	20,728
Village Deep... ...	180	7	41,000	21/ 1	15,115	20,217
Village Main R...	220	6	34,200	18/ 9	15,580	32,943
Robinson	250	6	53,500	14/11	23,973	60,454
Bantjes	100	3	23,900	20/ 5	6,141	1,358
Totals & averages	1160	43	267,050	19/ 0	115,089	£228,247

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep ...	47,190	£65,933	£28,135
Wolhuter	30,100	40,776	13,296
Consolidated Main Reef ..	21,230	33,602	11,542
Main Reef West	16,100	24,739	4,703
Knight Central	20,320	21,025	2,197
Total for group			£59,873

Glynn's Lydenburg.

The following are the particulars of the company's output for the month of October, 1913:—Tons crushed, 3,788, yielding 1,964 fine ozs.; estimated value of month's output, £8,318; estimated profit for the month, £4,527.

Barnato Group.

The following are the operations of the Barnato Group for the month of October:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold,	Gross Profit including sundry Revenue.
Cons. Langlaagte ...	100	43,740	£60,790	£23,680
Ginsberg	80	15,437	20,667	6,059
Glencairn	160	18,727	15,467	3,028
New Primrose	160	23,800	33,685	18,012
New Rietfontein ...	120	15,700	15,968	1,053
New Unified	60	12,800	15,761	5,153
Quest	35	3,694	3,381	911
Van Ryn Deep	70	34,400	56,985	23,680
Witwatersrand	220	38,610	48,137	23,021
October totals ...	1005	206,908	£270,841	£104,597
September totals.	1005	198,290	£257,685	£99,114

The monthly gross profits for 1913 are:—January, £79,198; February, £74,114; March, £81,152; April, £82,350; May, £81,949; June, £84,369; July, £59,316; August, £89,545; September, £99,114; October, £104,597.

The Albu Group.

The October operations of the producing mines of the Albu group resulted as follows:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West	80	14,756	£14,028
Meyer and Charlton	75	14,990	13,168
New Goch	120	28,330	23,129
Roodepoort United	50	25,097	21,484
Van Ryn	135	37,910	30,031
West Rand Consolidated ...	100	22.750	24,578
	560	143,833	£126,418

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West	19/ 0·2	£19,589	£5,561
Meyer and Charlton	17/ 6·8	35,609	22,441
New Goch	16/ 3·9	28,584	5,455
Roodepoort United	17/ 1·4	23,559	2,075
Van Ryn	15/10·1	53,601	23,570
West Rand Consolidated ...	21/ 7·3	29,671	5,093
		£190,613	£64,195

West Rand Consolidated.—The decreased tonnage and profit are due to extreme shortage of native labour.

East Rand Proprietary Mines.

820 stamps milled 138,100 tons; 53,620 ozs. of fine gold recovered; valued at £225,276, including 1,630 ozs., valued at £6,852, recovered from accumulated slimes. Profit for the month, £83,504, including £4,984 from treatment of accumulated slimes.

Rhodesian Section.

LATEST MINING NEWS.

The Cam and Motor and Giant Agreements— The R.N.L.B.—The Price of Lonelys—Land Schemes—Tanganyika Concessions—Chamber of Mines' Report—Bell Reef.

CIRCULARS have been issued to the shareholders of the Cam and Motor Gold Mining Company, Ltd., and the Giant Mines of Rhodesia, Ltd., giving details of the arrangement entered into between the two companies, which is as follows:

In consideration of providing a sum of £20,000 for further development work the Giant Mines Company will receive an option on the Cam-Good Shepherd, Petrol, Isis, Lorna Doone, and Jan Ridd claims for a period of two years. In the event of the further work producing satisfactory results within this period the Giant Company may form a new company to take over the claims on the following terms: (1) Out of the purchase price the Cam and Motor Company will receive £100,000 in fully-paid shares, and the balance be divided equally between the two companies, the Giant Company being entitled to fix the amount of the purchase price when exercising the option. (2) The Giant Company undertake to subscribe for £100,000 working capital at par, the sum expended on account of the £20,000 above referred to during the period of the option being taken as on account of this sum, but the Cam and Motor Company, Ltd., reserves the right for its shareholders to subscribe for one-half. (3) The Giant Company are to receive fully-paid shares at par in respect of so much of the £20,000 as shall have been expended during the period of the option.

* * * *

In the circular to their shareholders the secretaries of the Cam and Motor Company say:—" The question of the manner in which this portion of the property should be handled has long been under the consideration of the board, but the resources of the company having been fully taxed with the development of the Motor mine and its equipment, your directors have not felt justified in attempting to open up the other properties until the Motor mine had entered the profit-earning stage. If this proposal had not been accepted it would have been necessary to increase the capital by a further issue of shares, or to provide money out of the profits of the Motor mine, either of which courses would involve a curtailment of dividends."

* * * *

The secretaries of the Giant Mines of Rhodesia, Ltd., in the circular to their shareholders, say: " The directors are pleased to be able to report that they have entered into an arrangement with the Cam and Motor Gold Mining Company, Ltd., for the purpose of acquiring a working option over certain blocks of claims belonging to that company, known as the Cam, Good Shepherd, Petrol, Isis, Lorna Doone, and Jan Ridd, on the two first of which the Cam-Good Shepherd line of reef is situated; these claims immediately adjoin the Motor mine, which will be producing by the end of the year. The properties in question are well known to the company's engineers, who have strongly advised the acquisition of the option. In the last issued report of the Cam and Motor Company, Ltd., it was stated that at that date—*i.e.*, June 30, 1912—on the Cam-Good Shepherd line of lode, 102,628 tons had been opened up of a gross value of £227,478.

* * * *

It is generally understood that the Native Labour Bureau is shortly to be transferred from Bulawayo to Salisbury, though no official information on the subject is yet available. The change is believed to be due to economic reasons, and it is stated that it will involve a considerable saving.

There appears at last to have been a check to the up to now almost uninterrupted success of the developments on the Lonely mine, at Bembesi. A cable from London on the 25th inst. announced that the shares of the proprietary company had dropped to 45s. (the lowest figure touched since the flotation) on an unsatisfactory quarterly report. Probably the check is merely a temporary one. In any case no official news is known in Bulawayo, but while there is no local adverse gossip the receipt of the report above mentioned will naturally be awaited with some anxiety.

* * * *

The Chartered Company has informed Reuter's Agency in London that, as the result of [illegible] investigations as to the possibility of ranching in the outlying districts of Rhodesia, a scheme will be initiated in 1914 in the district to the south of Victoria on Texas lines, not with the idea of making a profit, but of converting prairie land into small farms. This will be accomplished by first grazing large herds of cattle, fencing the land, and boring for water, after which, with the expected increase in population, the country will become ripe for closer settlement.

* * * *

The Tanganyika Concessions reports that the programme laid down by the Union Minière du Haut Katanga for developing its operations in Katanga has been carried out in a very satisfactory manner. The two water-jacket furnaces which have been running simultaneously since the beginning of July last are working under good conditions. The production of copper for the first eight months of the present year has exceeded over 4,000 tons, the cost of production being in accordance with the previous estimates. In a cable sent by the manager of that company in Africa it is stated that the copper produced for July and August since the running of the two furnaces was 1,900 tons. The briquetting of the fine ore is being proceeded with. The construction of the first group of Coppée coke ovens is expected to be completed in time to start about the end of the present year. The manager states that when these ovens are working, and the company making its own coke, the costs, which are now quite satisfactory, will be still further reduced. The technical committee are now engaged in the study of the plans necessary to a large increase of production of copper.

* * * *

The report of the Executive Committee of the Rhodesia Chamber of Mines for the month of September states:—Payments during the month amounted to £116 19s. 6d. The overdraft on 30th September amounted to £73 5s. 4d. £600 was on fixed deposit. The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of July and August, 1913:—

	July, 1913.	August, 1913.
Local	14,504	13,883
Portuguese territory	6,315	6,225
N.W. Rhodesia	3,408	3,544
N.E. Rhodesia	4,729	5,453
Nyasaland	5,384	5,613
Other Sources	922	853
	35,262	35,571

The number of natives employed in August shows an increase of 66 when compared with the corresponding month of 1912. The distribution for the months of June and July was as follows:—

	June, 1913.	July, 1913.
Producing gold mines ...	23,095	25,284
Non-producing gold mines...	9,297	8,783
Coal and other mines	1,218	1,195
	33,610	35,262

* * * *

The report of the operations of the Rhodesian Native Labour Bureau for the eight months ended 31st August, which has been kindly furnished by the Chairman of the Bureau, shows that 8,623 natives have been distributed during the period. Of these 3,791 were allocated to mining members, 4,428 to farming members, and 404 to "general" members. 284 re-engagements to mining members were made. Unfulfilled applications of mining members at 31st August were for 84 natives. It is reported that from the information to hand at present the supply will be plentiful for all classes of employment. The average number of Bureau natives employed each month for the eight months was 12,492.

* * * *

Presiding at the annual general meeting of the Bell Reef Development Company, held in London in mail week, Mr. R. G. Fricker stated that the reduction plant which is of 4,000 tons per month capacity will, it is anticipated, be running at the end of this year. The installation in question consists of crushing, roasting, amalgamating and cyaniding plants and is expected to render very efficient service. In regard to the position underground the Chairman remarked:

Very little development has been done on the mine during the past year, as it was not possible to continue economical working below the 6th level through the old shaft, and therefore our energies have been concentrated on sinking the vertical shaft, so as to enable us to open up the lower levels of the mine. During the year this shaft has been sunk to a depth of 876 feet, or 68 feet below the 8th level. Shaft sinking operations have been suspended temporarily since the end of last April to permit of the shaft being lined up with steel sets; but it is hoped it will reach the 9th level before milling operations start, so that the permanent pumping plant can be installed to deal with the large volume of water which has been encountered in the mine, and thus lessen the cost of mining. It is encouraging to note that at the 5th level a new chute of ore has been opened up, giving an average assay value of 10 dwts. over 47 inches for a length of 110 feet, and it is hoped that when active development operations can be resumed this extension will be encountered on the other levels. The total length of the pay shute on the 5th level is now 635 feet, of an average value of 10.6 dwts. over a stoping width of nearly 5 feet. On the 6th level the shute so far has been opened up over a distance of 580 feet, and has an average assay value of 13.3 dwts. over 51 inches, while on the 7th level 290 feet of pay ore have been so far disclosed having a value of 15½ dwts. over a stoping width of about 46 inches; so that, although the ore body on this level is 14 inches less in width than on the 5th level, it is 5½ dwts., or, say, 22s. 6d. higher in grade. We have lately received cabled advice that No. 8 level has been struck in the cross-cut, and that 25 feet has been driven on it, which has exposed the reef, which has an average assay value of 11.2 dwts. over 31 inches; but no more driving will be done here until the shaft has reached and the pump is installed at the 9th level. No addition has been made to the ore reserves during the past year, but you will understand that ore is not regarded as developed which is only exposed in the drives, nor until it is blocked out on all the four sides; but there should be a considerable amount of prospective or partially developed ore in the mine as the result of the year's work which does not require any considerable expenditure to warrant its being included in the ore reserves. And now we come to the reduction plant. This consists of crushing, roasting, amalgamating, and cyaniding, and has a capacity of 4,000 tons per month. As soon as the system of treatment was definitely decided upon last year plans and specifications were prepared and orders placed with as little delay as possible. The plant is now in course of erection, and we are informed by cable that it is anticipated that by the end of this year it will be running and the mine will have arrived at the producing stage.

Rhodesia Museum.

The report of the Geologist of the Rhodesia Museum for last year states:—The year just ended has not proved a very eventful one in the history of the Geological Department, and the work accomplished has been chiefly of a routine nature. During the months from April to June, the post of Assistant Curator was occupied by Mr. Torrance, who performed a certain amount of determinative work for the public, and made a list of the mineral collection. The writer succeeded to the post in July and devoted his time to re-arranging and re-labelling the collections, and to determinative work as it became necessary. Our accessions during the year have been chiefly of extra-Rhodesian material, and include collections of Australian minerals from the Australian Museum, Mr. F. P. Mennell and Mr. Franklin White, and exchange collections of geological specimens from the University of Toronto, the Geological Survey of Ireland, the Durban Museum, the Kimberley Museum, and the Department of Mines, Macequece, P.E.A., and also from dealers. These exchanges are not yet all concluded. Of Rhodesian additions the most important is Mr. Franklin White's collection of some specimens of rocks, etc., from all over Rhodesia, the value of which, however, from an exhibition point of view, is very greatly impaired by the stipulation that the collection is to be kept intact. A list of individual donors is separately appended. The only addition to the accommodation of the Geological Department is the generous gift from Mr. H. E. Jones, of two wooden table cases which have been used to exhibit a collection of fossils. In all sections the case accommodation is inadequate. Among the minerals it has been found impossible to complete the re-arrangement in spite of numerous removals, nor is it likely that when the exchanges now in hand are concluded it will be possible to exhibit all the specimens thereby obtained. The re-arrangement and re-labelling of the minerals was undertaken soon after my arrival, and has made steady progress. The collection, which now numbers 1,500 specimens, has been put in systematic order, and a large number of headings descriptive of the species, and small labels have been printed. As mentioned, a collection of fossils consisting of the more striking specimens presented by the British Museum, fossil plants from the Kimberley Museum, and individual donations has been exhibited. It is arranged to show the principal faunal and floral features of the geological ages of the world. No alteration has been made in the collection of Rhodesian ores, as it is felt that no advantage will be gained until the whole can be put under glass. A collection of Rhodesian ores of tin was loaned to the Museum by the Geological Survey. No extensive collecting expeditions were undertaken during the year on account of the large amount of work to be done in the Museum. Determination of rocks and minerals for the public numbered eighty-five, and included nothing of importance new to Rhodesia. Besides these a large amount of determinative work was performed on material in the Museum collected by the former Curator.

Scottish Mashonaland.

The main point in the report of the Scottish Mashonaland Gold Mining Company is the proposal of the Directors to write down the issued shares from £1 to 10s. in order to bring the capital more into harmony with the present value of the company's assets. Investments figure in the balance sheet at £125,300; their value at the end-September settlement was £45,700. From the list given of the principal holdings, it appears the company has shares in half-a-dozen Rhodesian enterprises, the biggest block being 20,520 in the Gold Fields Rhodesian Development; interests in ten Transvaal undertakings, the best being the Transvaal Coal Trust and the worst the Jupiter; and in a similar number of miscellaneous concerns, from £6,000 four per cent. Preference stock in the Cambrian Railway to shares in the United Egyptian Lands. The holdings are a pretty mixed lot—neither better nor worse possibly than might have been got together by the ordinary investor—and the prospects of any material recovery is remote. On the company's Venus claims a limited amount of prospecting work has been attended with "fairly encouraging results," and should negotiations for tributing fall through, a small further expenditure has been authorised.

The best "Reef Traveller" is the *South African Mining Journal*.

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THE WEEK IN THE SHAREMARKET.

Quiet and Firm—Labour Shortage Still a Restraining Feature—Activity in Pilandsbergs—Rhodesian Interest Growing.

THE fact that almost all the mines of the Rand suffered from acute shortage of labour in October continues to exercise a damping effect on the market. An examination of prices of dividend-payers to-day shows that several are at bargain prices, and, given better labour conditions, must soon react to a higher level. The only active counter in the market, however, is still Pilandsbergs, and the dealings in this stock show that there is still lots of money available for a gamble. The mine is said to be opening out excellently, and may develop into a very big proposition. No one will begrudge Mr. Dale Lace his luck, should anticipations be realised. Other diamond stocks and tins remain quiet.

* * * *

In London in mail week, according to latest advices, the diamond group made the worst showing among South Africans, there being heavy Continental liquidation of De Beers Deferred and Jagers. On bear covering, however, the former closed above the worst. The shipments of precious stones (chiefly diamonds) into the United States for mail week, valued at $172,000, were the lowest for any similar period for years past, confirming the expectation that the imports would fall off seriously once the rush to avoid the incidence of the new tariff was over. However, some of the insiders contend that the recent bearishness as to the diamond trade outlook has been exaggerated, and market men would consequently not be surprised to see " shop " support for the leading shares forthcoming shortly, Premier Deferred held their ground, but a number of others were offered in sympathy with De Beers and Jagers. Although Kaffirs proper were generally dull, in harmony with prevailing conditions, the declines in no case exceeded 1-16 in extent and comparatively few shares changed hands. In the Rhodesian market there was further selling of Chartered and Tanganyikas by stale bulls, and a few others were the turn off. However, one or two of the small priced shares of companies owning land in the colony—Crescens and Willoughbys, for instance—were again in demand. It is stated that four representatives of the largest ranching concern in Colorado have left for Rhodesia to consult with Sir Starr Jameson on ranching and railroad matters. A meeting of the Globe and Phoenix is called to receive the report of the Committee appointed at the June meeting and of the directors who recently visited the mine.

* * * *

	Friday, 31st.	Sat., 1st.	Mon., 3rd.	Tues., 4th.	Wed., 5th.	Thurs., 6th.
Adair Ushers ..	0 3B	0 3B	—	—	—	0 3B
African Farms ..	14 6B	14 7B	14 7	14 4B	14 3B	14 4B
Apex Mines ..	17 0B	—	17 0B	17 0B	17 0B	17 0B
Aurora West Uniteds	—	—	—	7 0B	—	—
Bantjes Consolidated	13 6B	14 0B	—	14 0B	14 0	13 3B
Benoni Consolidated	2 0B	2 6S	2 0B	—	—	2 0B
Brakpan Mines ..	53 9B	54 0S	52 6B	50 0B	—	46 0B
Breyten Collieries	—	—	—	—	—	23 0B
British S.A. ..	20 6B	21 6S	—	20 0B	—	
Bushveld Tins ..	0 8B	0 8	0 10S	—	0 7B	0 8S
Cinderella Cons. ..	—	—	—	5 3B	6 0S	—
City & Subs. (£4) ..	46 9B	46 6B	47 6B	47 0B	47 6B	47 6B
City Deeps ..	54 9B	54 6B	54 9B	54 0B	54 6B	54 6B
Cloverfield Mines ..	4 0B	4 0B	4 0B	4 0B	—	4 0B
Clydesdale Colls. ..	9 0B	—	—	—	—	—
Cons. Langlaagtes	26 0B	26 0B	—	—	27 0	—
Cons. Main Reefs ..	16 9B	16 6B	16 3B	16 6B	16 9	16 6B
Cons. Mine Select.	8 6B	—	8 6B	—	—	—
Coronation Colls. ..	—	11 0B	—	—	—	—
Coronation Freeholds	0 5B	0 5B	0 5B	0 5B	0 5B	0 5B
Crown Diamonds ..	7 9B	7 6B	7 6B	8 0S	8 0S	7 0B
East Rand Centrals	8 3B	8 3B	8 3B	8 3B	8 3B	8 3
East Rand Coals (2/6)	1 9B	1 9B	1 9B	1 9B	1 9B	1 9B
East Rand Deeps ..	1 0B	1 6S	1 0B	1 0B	1 0B	1 6S
East Rand Props.	43 6B	43 0B	—	43 0B	42 0B	42 3B
East Rand Debs. ..	—	—	—	£90S	—	—
Eastern Golds (1/-)	1 3S	1 0B	1 3S	1 0B	1 0B	1 3S
Frank Smith Diam.	7 0B	7 6	7 3	7 0	6 3	6 3
Geduld Props. ..	21 6B	—	—	20 0B	20 0B	—

B Buyers. S Sellers.

	Friday, 31st.	Sat., 1st.	Mon., 3rd.	Tues., 4th.	Wed., 5th.	Thurs., 6th.
Glencoe (Natal) Colls.	7 0B	—	—	7 0B	—	7 3B
Glynn's Lydenburgs	14 0B	—	—	14 0B	14 0B	—
Government Areas	16 8B	18 9	19 0B	19 0	18 9B	19 0
Jumpers	—	4 0S	—	—	—	—
Jupiters	3 6B	3 0B	3 3B	3 3B	3 6B	3 6B
Kaalfontein D. (2/6)	0 3B	0 3B	—	0 3B	0 3B	—
Klerksdorp Props.	2 0	1 11B	1 11B	1 11B	1 11B	1 11B
Knights Centrals ..	6 5B	6 5B	6 5B	7 6	8 3	9 0
Knights Deep ..	33 6S	—	—	35 0S	—	—
Lace Props. ..	2 6B	2 3B	—	—	2 6B	—
Luipaardsvlei Est.	—	—	7 6B	—	—	—
Lydenburg Gold Fms.	2 10B	2 9B	2 10B	2 10B	2 10B	—
Main Reef Wests ..	7 0B	7 6B	—	—	—	—
Middlevlei Estates	0 9B	0 10B	—	0 10B	—	1 0S
Modder B's ..	—	77 6B	77 6B	77 6B	77 0B	77 6B
Modder Deeps ..	32 6	32 3B	32 3B	32 6B	32 3B	32 3B
Natal Navigation Col.	14 6B	—	—	14 6B	—	—
New Eland Diam...	29 0B	29 0B	29 0B	—	29 0B	—
New Era Cons. (5/-)	5 7B	5 6B	5 6B	—	5 6B	—
New Geduld Deeps	2 0B	2 0B	2 0B	2 0B	2 0B	—
New Kleinfonteins	22 6B	22 6B	22 6	—	22 0B	—
New Modders ..	225 0B	225 0B	225 0B	220 0B	—	222 6B
New Rietfonteins ..	1 0B	—	—	—	—	—
New Unifieds ..	—	—	—	—	12 6B	—
O.F.S. & Trans. Dia.	1 8B	1 7B	1 8B	1 6B	1 6	1 7B
Piggs Peak ..	9 0B	9 0B	9 0B	9 0B	9 0B	9 0B
Pretoria Cement Co.	42 6B	43 0B	43 0B	43 0B	44 0B	44 6B
Princess	4 6B	4 6	—	4 3B	4 6	4 3B
Rand Klips ..	1 10B	1 9B	1 9B	1 9B	1 9B	1 9B
Rand Nucleus ..	1 7B	1 7B	1 7B	1 9S	1 7B	1 7B
Randfontein Estates	26 0B	26 0B	—	25 6B	25 6B	25 3B
Robinson Deeps ..	31 3S	31 0S	—	—	—	—
Rooiberg Minerals	29 6	29 0B	29 0	28 6B	28 0B	28 0B
Rood. Durban Deeps	19 0B	—	20 0B	20 0	20 0B	—
Ryan Nigels ..	—	—	—	—	—	3 0B
Simmer & Jack ..	9 0B	—	—	—	—	—
Simmer Deeps ..	1 0B	—	1 0B	1 0B	1 0B	1 0B
Solomon's Temple Tin	—	—	—	—	—	—
S.A. Breweries ..	41 0B	—	41 0B	41 0B	41 0B	41 6
S.A. Diamonds ..	30 0B	30 0B	30 0B	30 0B	30 0B	30 0B
S.A. Lands ..	3 0B	3 2	3 1	3 1	3 0	3 0B
Springs Mines ..	13 0S	12 0B	12 3B	12 6B	12 6	12 3B
Steyn Estate ..	—	—	13 6S	13 6S	13 6S	13 6S
Sub Nigels ..	8 9B	—	8 9B	8 9B	8 0B	8 6
Swaziland Tins ..	44 0B	45 6	—	—	—	44 0B
Trans. Coal Trusts	32 6	32 6	—	31 6B	31 6B	31 3
Trans. Cons. Lands	20 0B	—	—	—	—	21 0B
Trans. G.M. Estates	47 6B	47 6B	47 6B	47 6B	—	47 6B
Tudors	2 0S	—	—	—	—	—
Van Ryn Deeps ..	35 6	35 0B	34 9B	34 9	34 9B	35 0
Village Deeps ..	35 0B	35 0B	—	35 6B	—	34 6B
Vogel. Cons. Deeps	—	—	—	1 0S	1 0S	—
West Rand Estates	1 0B	2 6S	—	—	2 6S	—
Witbank Collieries	—	40 0B	41 0B	41 0B	41 0B	41 0B
Witwatersrands ..	68 9B	68 0B	68 0B	—	68 0B	68 0B
Wit Deeps	57 6B	57 6B	57 6B	57 6	57 6B	57 3B
Wolhuters	13 9B	13 0B*	13 0B	12 9B	13 0B	13 0B
Zaaiplaats Tins ..	35 9B	34 6B*	—	34 6	33 6B	33 6

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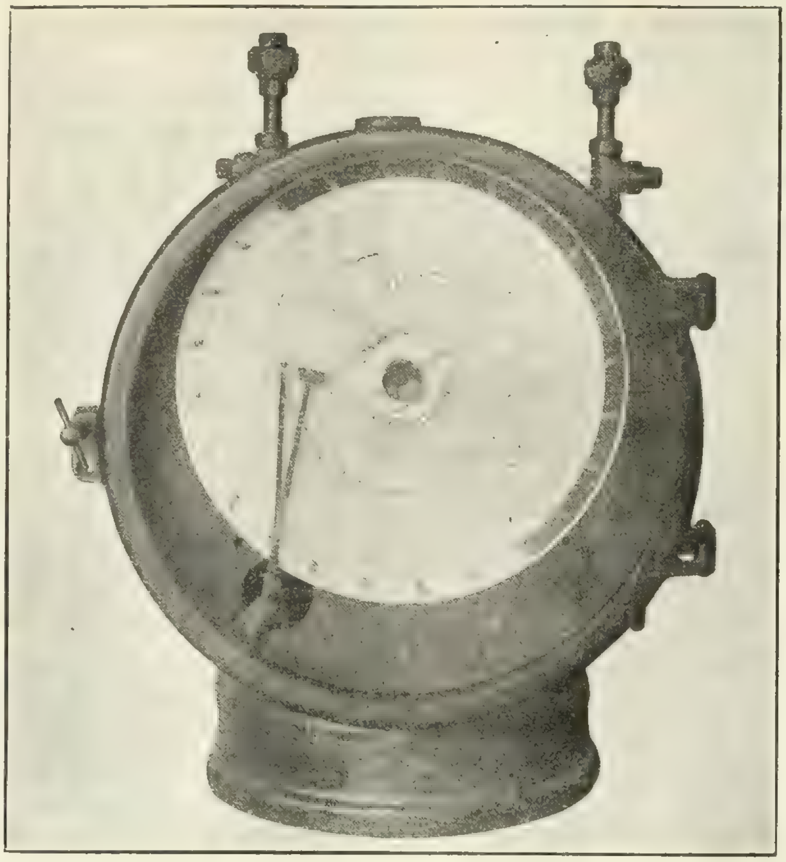

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Engineering Notes and News.

Nissen Stamp Tests on Tin Ores.

Pending the completion of the Sandycroft five-stamp mill, which is being erected alongside the Nissen two-stamp mill at the Carn Brea and Tincrorft mines, a test has been made with the latter simultaneously with 10 Californian stamps at the South Crofty mill on tin ore from the Tresavean Mine. The trials were left in the hands of Mr. Josiah Paull, the manager of South Crofty, and consulting engineer to the Tresavean, and he is stated to have since recommended the installation of Nissen stamps at the latter mine. Appended are the details of the tests which have been suppiled to us :—

	Two Nissen stamps.	10 stamp S. Crofty.
Weight of stamps (lbs.)	2,000	1,050
Number of drops per minute	94	—
Height in drop (ins.)	9	—
Mesh of wire screen	14	14
Tons of ore crushed (2,000lbs.)	5.6	5.6
Hours run	6.50	3.25
Tons per stamp per 24 hours	10.33	3.75
Units of power per hour	7.85	20
Cost of power per ton crushed (pence)	5.46	6.96

Grading Analysis.	Nissen Stamps.		South Crofty Stamps	
	Dry. Per Cent.	Wet. Per Cent.	Dry. Per Cent.	Wet. Per Cent.
Discharge + 20	3.6	3.5	2.7	2.2
Discharge + 40	22.4	22.7	17.4	16.9
Discharge + 60	9.9	10.9	8.5	8.0
Discharge +100	20.8	18.8	20.5	19.2
Discharge +150	10.6	7.0	8.0	7.1
Discharge −150	32.7	37.1	42.9	46.6

The wet screen grading analysis, done to determine the amount of minus 200 mesh product produced, gave the following results :—

Discharge.	Nissen stamps.	Sth. Crofty mill.
+200	67%	61%
−200	33%	39%

The Nissen stamps have also been run on Carn Brea ore, and the results of the different trials are given below :—

Test No.	1.	2.	3.	4.
Weight of stamps (lbs.)	2,000	2,000	2,000	2,000
No. of drops per minute	92	94	94	94
Height of drop (ins.)	7	9	9	9
Class of screen used	Wire.	Wire.	Wire.	Cornish.
Mesh of screen	10	10	20	36
Aperture, in inches	.064	064	.028	.028*
Tons ore crushed (2,000 lbs.)	12.20	17.75	3.36	5.26
Hours run	12.38	15.76	4.39	7.46
Tons per stamp per 24 hours	11.82	13.5	8.76	8.1
Units of power per hour	7.62	7.85	7.85	7.85
Cost of power per ton crushed (pence)	4.63	4.18	6.54	6.93

*Approximate.

GRADING ANALYSIS.

Test No.	1.	2.	3.	4.	
		Dry.	Dry.	Dry.	Wet.
		%	%	%	%
Discharge + 20	*	13.1	—	—	—
Discharge + 40	*	23.1	14.0	5.4	5.1
Discharge + 60	*	9.8	10.9	13.3	12.9
Discharge +100	*	19.9	24.2	28.1	27.3
Discharge +150	*	8.9	12.5	10.5	9.4
Discharge −150	*	25.0	38.4	42.7	45.3

*No samples taken.

The tests with Nissen stamps, we are informed, were all very much interrupted through lack of water, and it is considered that with regular running still better results would be possible. The result of the test in which a Cornish screen was used is regarded as particualrly satisfactory, the screen analyses showing a much more granular pulp than usually obtained in Cornwall. This goes to confirm the opinion held by the inventor and manufacturers of the Nissen stamp that this mill would give not only an increased output at a lawer cost for power, but also contribute to the securing of a higher tin recovery ratio, inasmuch as it would produce less slimes.

A Great Powder Blast.

A monster blast in the Boundary district of British Columbia broke down 200,000 tons of ore on September 1. The blast was made at the British Columbia Copper Co.'s Mother Lode mine at Greenwood. For several months previous, in addition to the ordinary work at the mine, the task of drilling 4,830 holes, averaging in depth between 14 and 15 feet, had been going on under the direction of the company's general superintendent, F. S. Norcross, Jr. The system of breaking ore was begun in 1911, but for dimensions this latest blast exceeded all others that have taken place in the history of the mine. The noise was not heard either at Phœnix or at Greenwood; at the latter town and at Midway, a slight tremor of the earth was the only intimation that the blast had taken place. Extreme precautions against accident were taken, and not only were the families of the mine employees ordered from the vicinity, but their household effects also went with them. Electricity was used to fire the charges, which were connected by 16 miles of wire, and consisted of 24½ tons of 40 per cent. dynamite.

ANSWERS TO CORRESPONDENTS.

"Borehole."—Yes; you are correct. Boreholes have been carried down to a greater depth than 4,000 feet. We believe the deepest hole was put down by the Oceana Company, near Meyerton, in the Heidelberg district, which penetrated to a depth of over 5,000 feet.

Finance, Commerce, and Industries.

Land Settlement. The Minister of Lands (Mr. Theron) has issued information to the Press on the subject of land settlement. The Minister states that since last year, when the Land Settlement Act came into operation, 149 holdings had been allotted under the Act, covering an area of 114,091 morgen, valued at £197,419. The Crown land gazetted under the Act represented 160 holdings of 148,961 morgen, valued at £123,898. Applications by individuals for the purchase of land by the Government in terms of section eleven of the Act—under which section applicants contributed one-fifth of the purchase price—numbered to date 284 for 187,921 morgen of land, valued at £511,009. Of this number 95 applications were approved in respect of 57,053 morgen of land, valued at £156,492. The number of applications refused was 93 and the number abandoned or withdrawn 76, while twenty were still under consideration. The amount spent by the Government on the acquisition of land for settlement purposes and advanced to settlers from June 1, 1910, to September 30, 1913, was £283,978. The following allotments of Crown lands had been made between the date of Union and October 6 of the present year:—Year 1910: 318 holdings of 746,736 morgen, value £177,274; year 1911: 435 holdings of 516,279 morgen, value £343,605; year 1912: 423 holdings of 530,632 morgen; year 1913 (to October 6): 352 holdings of 219,757 morgen, value £244,707. Total holdings: 1,528 of 2,013,404 morgen, value £1,008,716. In addition to the above, portions of the commonages in the Stockenstroom district had been allotted as follows: 85 allotments of 16,707 morgen. The amount provided on the loan estimates for 1913-14 for the purchase, laying-out and the improvement of land for settlement purposes was £100,000, but the amount spent and for which commitments existed was (on October 6) £143,000. Since then authority for an additional £50,000 had been obtained, so that Parliament would be called to vote £100,000 on the supplementary estimates for the purpose of land settlement undertaken this financial year.

* * * *

Union Imports and Exports. For the nine months ended September 30th, Union imports amounted to £31,712,210, as against £29,115,038 in the corresponding period of last year, while the export figures for the two periods were £50,583,338 and £46,147,703 respectively. The import trade via Capetown shows a far larger proportionate increase than that of any other port, the growth in the value of imports through Capetown being 22 per cent. as compared with last year. Durban shows an increase of 4½ per cent. only, while Port Elizabeth's increase is nearly 9 per cent. Delagoa's share of the import trade has remained practically stationary, but it must of course be remembered that these figures refer to value and not to tonnage. We imported in the first nine months of the present year articles of food and drink to the value of £5,711,849, as against a value of £4,440,550 last year, an increase of 28 per cent., and of this nearly a million sterling is explained by increases in corn, grain and flour imports. Again, motor cars and bicycles were imported in the nine months of this year to the value of £950,000, or more than twice as much as last year, and the imports of mineral oil (including petrol and motor oils of various kinds) leaped up from a value of £50,000 to £167,000. These are the only really marked expansions in imports. In most of the big buying lines South Africa has been purchasing on very much the same scale as in the previous year, as the following comparison will illustrate:—

	Nine months, 1913.	Nine months, 1912.
Apparel and slops	£2,069,672	£2,141,663
Cotton manufactures	2,481,101	2,416,197
Haberdashery	1,000,836	1,088,919
Hardware	1,393,297	1,295,881
Iron and steel manufactures ...	1,065,773	992,587
Machinery	2,036,765	2,028,107
Woollen goods	677,176	766,354
Leather goods	1,224,801	1,209,098

There is an encouraging increase in the imports of wood and timber, cement, and building material generally, which suggests that the building trade is reviving, a fact which is doubtless the reflex of the upward tendency of rents in the larger centres of population. On the whole, however, the figures seem to suggest that, except in a few special lines, South African trade is marking time at a fairly high level. The export side of the account shows no specially new features, and the facts may best be summarised by a table showing the classes of articles in which there has been a marked increase or decrease during the nine months. Taking first the increases:—

	Nine months, 1913.	Nine months, 1912.
Gold	£28,811,942	£28,400,674
Diamonds	9,976,776	6,836,170
Wool	3,403,852	2,770,871
Ostrich feathers	2,274,798	1,942,900
Hides and skins	1,524,762	1,143,853
Coal	1,040,115	893,273
Tin ore	257,422	171,625
Bark	242,196	230,661

In all these categories, the advance has been substantial, and special emphasis may be laid on the increase in the wool and feather exports. The chief articles in which a decline is shown are copper ore and regulus, maize (a fall from £370,162 to £18,052); mohair, which has fallen in value from £695,000 to £616,891, and whale oil. In most other commodities the export has been well maintained.

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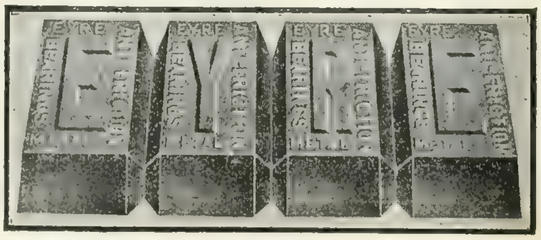

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MINING MEN AND MATTERS.

Mr. J. H. Rider, of the Corner House, has returned to the Rand.

* * * *

Mr. Leopold E. de Villiers has been appointed manager of the Nigel gold mine.

* * * *

Mr. H. J. Krauss, managing director of Kamfersdam Mine, has sailed for South Africa per s.s. Saxon.

* * * *

We understand that Mr. Max Elkan is severing his connection with Messrs. A. Goerz & Co., Ltd., and that Mr. Ross Skinner will leave the E.R.P.M. at the expiration of his agreement.

* * * *

At the last meeting of the Institution of Mining and Metallurgy it was announced that Dr. F. H. Hatch, M.Inst.C.E., had been elected president for the forthcoming year. We heartily congratulate Dr. Hatch on his election to this important office.

New Boksburg.

The annual meeting of the New Boksburg G.M. Co., Ltd., took place in the National Bank Buildings on Wednesday, under the chairmanship of Mr. E. H. Read. Among those present were Messrs. W. Pott, C. G. Taylor, L. J. Rudings, A. C. Simpson, W. J. Gau, G. W. Austin, transfer secretary, and L. S. Raymond, secretary.

The Chairman moved the adoption of the report and said : You have before you the report of the directors for the year ended the 30th of June, 1913, together with the audited balance sheet of the company at that date. The cash on hand amounted to £34,552, from which must be deducted the sum of £189, due to sundry creditors of the company. The general expenditure during the year was £2,325, made up of : Claim licences, £2,451 ; caretaking, etc., £889 ; secretarial, agency and auditors' fees, rents, stationery, etc., £759—£4,099. Less interest and sundry revenue, £1,774. Total, £2,325. No fees have been drawn by the directors or the London committee, and the expenses of the company have been reduced to a minimum. Throughout the year the property has been in the hands of a caretaker. The year has been one of depression, and no discoveries have been made by your neighbours, the East Rand Proprietary Mines, Limited, and the Cinderella Consolidated, to justify operations being recommenced on your property. The policy of the board has been to husband your resources ; and, at the same time, keep your assets intact.

The report and statement of accounts were adopted.

Rand Klip.

In the board-room, National Bank Buildings, on Wednesday, the annual meeting took place of the Rand Klip Co., Ltd. Mr. E. H. Read occupied the chair, and present were Messrs. G. Sonn, A. G. Gill, W. H. B. Frank, C. G. Taylor, A. C. Simpson, H. Eckstein, L. J. Rudings, G. W. Austin, transfer secretary, F. W. Baxter, W. G. Gau, and L. S. Raymond, secretary.

In moving the adoption of the annual report, the Chairman said : The directors' report and audited accounts for the year ended the 30th of June, 1913, are before you. From the balance sheet you will notice that the cash on hand, after allowing for sundry creditors of the company, amounts to £12,087. At the end of March, 1913, owing to the working capital being practically exhausted, the board was compelled to suspend mining operations ; and, the underground equipment having been withdrawn, the shaft was allowed to fill with water. Reviewing the development operations since the reef was struck, it will be seen that the work was carried out on three levels, and that, in all, 6,177 feet were driven, risen and sunk. Of this 2,740 feet were on reef ; the average exposures being 4.6 dwts. over 21.7 inches. As regards the first and second levels, with the exception of short payable stretches at wide intervals, the whole of the development exposed was unpayable. On the third level 235 feet of work only had been done at the date of closing down. This gave an average of 8.4 dwts. over 27.4 inches. It will thus be seen that such indications as we have, point towards the possibility of payble values being obtained by further development work, and it is greatly to be regretted that the finances of the company would not admit of this. The present market conditions are such that no scheme for the provision of further capital, which would be acceptable to shareholders, can be put forward at the moment, and we have, therefore to wait for the turn of the tide. In the meantime, we are keeping a watch on the operations of our neighbours in the hope that results obtained by them will be such as to induce investors to come forward with further working capital for this concern.

The report and statement of accounts were unanimously adopted. The appointment was confirmed of Messrs. E. H. Read and C. P. Marais as directors of the company in place of Messrs. George R. Airth and C. R. Pinder, resigned.

Messrs. H. Eckstein and C. P. Marais were re-elected on the board.

New Vaal River Diamonds.

During October 466 diggers working on the estate of the New Vaal River Diamond and Exploration Company, Ltd., produced 4,886¾ carats of diamonds, which realised £25,021 5s.

Kolmanskop Diamonds.

The output of diamonds from this company's property at Luderitzbucht for the month of October was 8,017 carats. The low production is still due to scarcity of labour, the company's complement of boys having decreased from about 700 to 400.

Luipaardsvlei Estate.

The following is the result of operations at the Luipaardsvlei Estate for the month of October :—60 stamps ran 29·969 days, crushing 18,250 tons, yielding 1,844 fine ozs. gold; 3 tube mills ran 29·894 days, yielding 788 ozs. fine gold; sands treated, 12,980 tons, yielding 1,420 ozs. fine gold; slimes treated, 5,270 tons, yielding 480 ozs. fine gold ; profit from operations, £3,284 ; sundry revenue, £900 ; total profit, £4,184 ; total working expenses, £15,736 ; costs per ton, 17s. 2·944d.

Brakpan Mines.

The following are the returns from the Brakpan Mines for the month of October :—Stamps working, 140; running time, 26 days; ore crushed, 49,545 tons; tube mills working, 8; ore hoisted, 54,318 tons; ore from dump, 2,080 tons; waste sorted, 12·86 per cent. ; fine gold declared, 15,032 ozs. ; value declared, £63,314, equal to 25s. 7d. per ton milled. working costs, £46,481, equal to 18s. 9d. per ton milled; working profit, £16,833, equal to 6s. 10d. per ton milled. Owing to acute native labour shortage, the mine being over 1,100 boys short of former strength, work was concentrated on the more easily worked but lower grade stopes.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre —Italian Lyric Company	8.15
Standard	See bills.
Empire	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

South African School of Mines and Technology.

DEPARTMENT OF ELECTRO-TECHNICS.

The Council of the School invites applications for the position of Professor of Electro-technics. Duties to begin 1st March, 1914. Salary, £1,000 per annum. The work includes Lectures and Laboratory practice, with excursions for Diploma Students and Classes for Evening Students.

Subject to the Council's regulations the Professor is allowed to undertake private work.

Applications, accompanied by a medical certificate of good health, should be sent with copies of testimonials (which will not be returned), stating age, professional training, and experience, to the undersigned, P.O. Box 1176, Johannesburg, not later than December 1st, 1913.

GEORGE S. CORSTORPHINE,
Principal.

Automobile Notes.

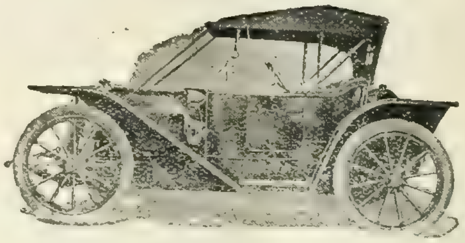
As an instance of the celerity which marks business enterprise in America, we note that the new Maxwell Car Company, within two months of its inception, had appointed 400 agents and had entered into contracts for the supply of 40,000 cars. In Boston the agents of the company wired for a train-load of these cars—the 25 h.p. model being the favourite—and a prompt despatch of 33 railway trucks carrying 99 cars was the reply. Mr. William Campbell, of Johannesburg, is the company's representative in South Africa, and will appoint agents for each district. Mr. Campbell, who will shortly be visiting Capetown, is also agent for the Tiffany Electric Pleasure Motor Car, and the Henderson 4-cylinder motor cycle, one of which machines has recently completed the world tour.

* * * *

The Napier Motors, Ltd., have adopted an entirely novel method of introducing their new model, 30-35 h.p. 6-cylinder 1914 model. This is a strenuous mountain climbing test, in a single trip covering less than a fortnight, during which all the passes of note in the Alps and the Dolomites were climbed—a matter of over 2,100 miles, and the enormous total of 66,000 feet of mountain climbing. The test was carried out under official observation of the Royal Automobile Club and was accomplished at an average speed of 20 miles an hour without falling more than one gear from " top " on any of the passes. The whole distance out and home was accomplished without an involuntary engine stop and without boiling or the addition of any water throughout the test. At the finish, and still fully loaded, a speed of 62½ miles per hour on the track was attained. The achievement is rendered the more remarkable in that during the whole of the first week the most adverse conditions prevailed—heavy rains and blusterous head-winds militating strongly against economic success. The car carried four passengers throughout the journey—a total weight of 5,088 lbs.—and the petrol consumption worked out at 18 miles per gallon.

* * * *

When a General Traffic Ordinance comes up for the consideration of our Legislature the following clause, which is embodied in the English Motor Car Act, should find a place: " Local authorities . . . shall within their areas cause to be set up sign-posts denoting dangerous corners, cross-roads and precipitous places, where such sign-posts appear to them to be necessary." At present there is no obligation on local authorities to erect these warning signs.



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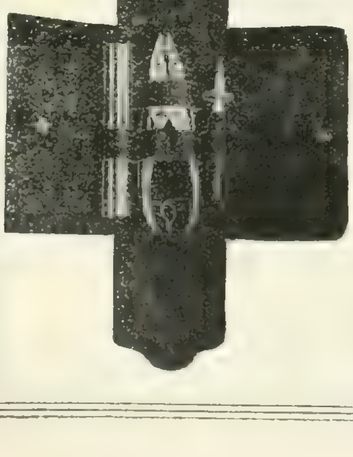

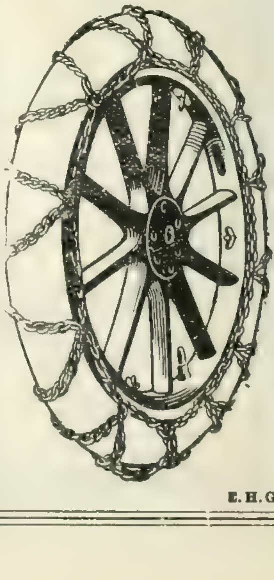

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New Price Lists on Application.

A book entitled "Motor Transport in the Empire," containing the proceedings of the Imperial Motor Transport Conference, has recently been issued. It contains much matter of great interest to all who are in any way concerned with the use of motor vehicles for industrial purposes. The papers and discussion on the subject of motor fuels are of particular interest as showing the great importance which is attached to the possibility of employing alcohol as motor fuel. The design of motor vehicles for military service and for use in the Dominions and Colonies, and the carriage of goods and passengers by motor vehicles are fully and ably discussed by recognised authorities on the various branches of the subject.

* * * *

The annual general meeting of the Royal Automobile Club of South Africa was held at the Grand Hotel, Capetown, on Tuesday last.

* * * *

Some interesting figures have lately been issued by the Swiss Government giving the number of privately owned cars in Switzerland. The number at the commencement of the present year is given as 4,665, only 1,629 of which are of Swiss manufacture. The other figures given are 1,550 French (representing 26 different makes), 476 German (11 makes), 282 Italian (5 makes), and 11 British (all one make, the Humber); the origin of the remaining 555 cars is unknown.

* * * *

Motor Regulations.

At the annual meeting of the Royal Automobile Club of South Africa, held at Capetown last week, Mr. A. T. Hennessey, who presided, reviewed the position created by the Motor Ordinance passed by the Provincial Council last July, and which comes into force on January 1 next. Every motorist will be required to undergo a driving test and hold a licence, and all motor vehicles will be numbered, the necessity of which provision is now recognised, as a means of identification. Steps are being taken to deal with reckless driving in the Cape Peninsula. The annual report of the club recorded appreciation of the reasonable attitude adopted by the Administrator and the Provincial Council, though the point was again emphasised that the Ordinance differentiates against the horse vehicle, which escapes taxation. The Administrator, however, has promised at an early date to introduce a further Ordinance authorising regulations for all classes of traffic. As illustrating the growth of motoring in South Africa, it is interesting to note that the value of cars imported into the Union during the first nine months of this year was £785,000, as against £350,000 for the whole of the previous year. The position emphasises the need of a general scheme of road improvement, to which, it is understood, official consideration is also being given.

It is stated that good results are being obtained from the distillation of peat by the Del Monte process, and that a high percentage of oil is being yielded by their retorts.

* * * *

This year's Cople de L'Auto provided a sporting race, which resulted in a victory for France. Boillot and Goux on Peugeots were first and second, K. Lee Guinness on a Sunbeam third, and Hancock on a Vauxhall fourth. The winner's average speed was 64¼ miles per hour.

Elandsfontein Estate Company, Ltd.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twentieth Ordinary General Meeting of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on FRIDAY, 12th DECEMBER, 1913, at 11.15 o'clock in the forenoon, for the following purposes, viz. :—

1. To receive the Reports of the Directors and Auditor and to consider the Balance Sheet as at 31st October, 1913, and Profit and Loss Account for the year ended 31st October, 1913.
2. To elect two Directors in the places of Messrs. F. D. P. Chaplin, M.L.A., and C. Davies, who retire by rotation, but are eligible and offer themselves for re-election.
3. To appoint an Auditor for the ensuing year and to fix the remuneration for the past audit.
4. To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from 5th to 12th December, 1913, both days inclusive.

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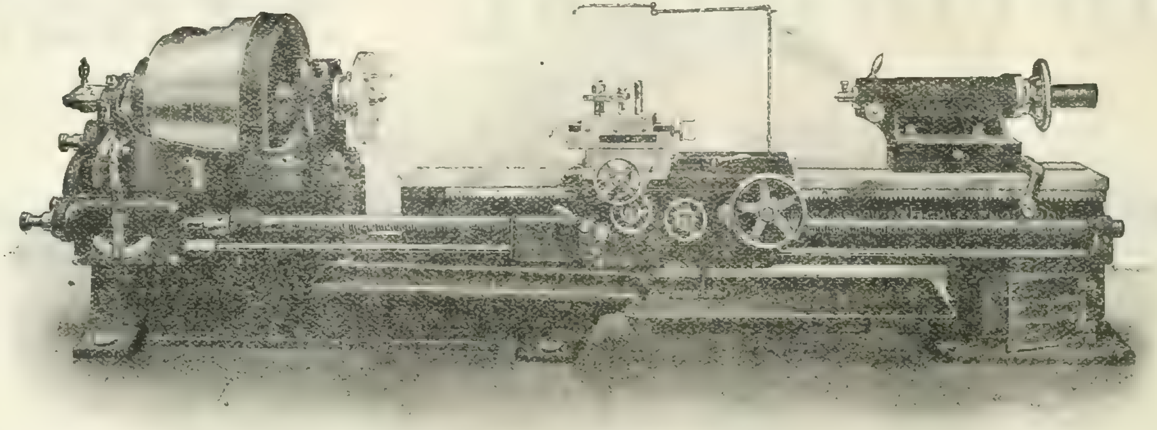

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South African Mines, Commerce and Industries.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Two "Central Mining" Company Meetings.

The speeches delivered by chairmen, and proceedings at the annual meetings of two important Rand Mining Companies, under Corner House control New Modderfontein and Nourse Mines—which were held during the past week, appear elsewhere in this issue. In each instance the results must be adjudged satisfactory. Both companies registered high-water mark in regard to profit, the New Modder's earning being £559,243 and that of the Nourse, although for eleven months only, £260,508. In the case of both mines there has been acute shortage of labour since the close of the financial years in June, and the New Modderfontein, which had 2,000 boys, as against between four and five thousand in the earlier part of the year, has suffered severely. At the New Modderfontein meeting Sir Lionel Phillips, who presided, referred to the excellent developments taking place in the neighbourhood of the No. 12 and circular shafts, and in reply to questions remarked that whilst plans were being prepared for the extension of the mill at the circular shaft at some future date, it was not contemplated at the moment to increase the crushing plant. Mr. Boyd, at the Nourse Mines meeting, told shareholders that values in depth in the west section have, on the whole, been disappointing, while in the east section the values continue to be good, but the ground remains much disturbed.

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Stock Market Depreciation.

The table of 387 representative Stock Exchange securities appearing in the last issue of the *Bankers' Magazine* shows that the fall in prices during last month has established a fresh low-water mark. The all-round decrease is 1.6 per cent. and has affected every department, with the exception of Brewery stocks and Tramway and Omnibus shares, which are up 2.4 and 2.3 per cent. respectively, and Telegraphs and Telephones, which show no change on balance. It is to be noted, however, that since the date when the comparison was struck there has been a fairly sharp recovery from the lowest point touched. The chief factor in the depression has been the continued run of new issues and the poor response to them on the part of the general public, but dearer money has also played its part. The heaviest drop is that shown by South African Mines, which are down 5.7 per cent., Copper Mining shares being a good second with 5.2 per cent.

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African and European Investment.

The African and European Investment Company, Limited, may be said to have done comparatively well to have secured a profit of £5,268 in the year to June last. There have been few opportunities to realise any of the securities at a profit, but the company was able to sell the surface rights of a farm at Lydenburg, of an area of 5,300 acres, for £7,500. The company owns 1,320,900 acres, and an excellent profit should be ultimately secured. Other important interests are shareholdings in the Vereeniging Estates, Lonely Reef, and Cam and Motor, for all of which a prosperous future is predicted.

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Delagoa Bay Development.

The Delagoa Bay Development Corporation, Limited, continues the payment of 3 per cent. on the Ordinary shares, the distribution having been paid for the last three years. Progress is necessarily slow, for the company owns the waterworks, the telephone and electric tramways at Lourenco Marques, and utility enterprises do not increase their revenue rapidly unless the town in which they are situated is growing. Lourenco Marques is not making much headway, as is evidenced by the falling off in the number using the tramways, but as a result of economies effected in running, the profits were slightly larger. After debiting London charges and debenture interest, transferring £4,179 to reserve against depreciation, and placing £1,613 to reserve for amortisation, the disposable balance with the sum brought forward was £6,554. The dividend of 3 per cent. will absorb £4,011, leaving £2,543 5s. to be carried forward, or just £464 more than that brought in. The position has therefore slightly improved, because no reserve for amortisation of property was made until this year.

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Sheba Results.

The directors' report on the Sheba for 1912-13, just issued, shows that the distributions for the past financial year totalled 17½ per cent., as against 15 per cent. for 1911-12. The tonnage of ore treated was almost the same in both years, but the grade was higher in the later period, and the improvement in this respect more than counterbalanced the small increase in working costs. In the result the profit for 1912-13 was £55,500, or about £5,600 more than in the previous year, before deducting the company's proportion of the loss (£3,270) in connection with the working of the Rosetta property, on which, in 1911-12, there was a small profit. In all, the ore reserves at the end of June were estimated at 110,000 tons, or 17,000 less than at the corresponding date last year. The falling off is attributed chiefly to the shortage of native labour having interfered with development work, and is not at all seriously regarded by the consulting engineer, who, in fact, writes that he considers the prospects are "highly satisfactory."

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Oceana Consolidated Report.

Although the accounts of the Oceana Consolidated Company for the year ended 30th June last show a credit balance of £38,300, as against £16,470 for 1911-12, the shareholders have again to do without a dividend. In view of the existing market conditions and of the undeveloped state of some of the most important interests of the Company, the Directors consider it prudent to follow a conservative policy. They are consequently strengthening the financial position by carrying a further sum of £50,000, together with the increment of £13,000 in the aggregate capital value of the total assets disclosed by the re-valuation which has been made, to the reserve against quoted securities, and £60,000 is being carried to a suspense reserve account "as a precautionary—and it is hoped a temporary—measure." There remains £4,850 to be carried forward. Shareholders may find some sort of rueful satisfaction in the fact that administration expenses have been reduced and in learning that substantial progress has been made by the new Board in the direction of placing certain of the ventures in which the Company is largely interested in a marketable form and also of constituting them sources of income. The schedule of quoted securities appended to the accounts shows the Company's largest interests to be in the West African Trust, the Taquah and Abosso mines and the New Egyptian Company, in the order named.

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Knights Deep Restricting Operations.

On account of the acute scarcity of native labour, work in the Lohse shaft section of the Knights Deep mine has had to be greatly restricted and the shaft has been temporarily closed down. The step has involved the retrenchment of about 50 men, who have each received a six shifts bonus and have been promised re-engagement as soon as conditions improve sufficiently to warrant this.

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Creig Diamonds.

Mr. H. J. Filmer, managing director of the Greig Diamonds (Schweizer-Reneke Town Lands), Ltd., has recently returned from a visit to that property and reports that from two to three thousand loads of ground have been got ready for washing, and that the prospects generally are good. Mr. Wm. Murray, the manager, has done good work in connection with erection of the new plant. The engine and elevator gear, etc., have been installed and erection of the new pan should be completed at a very early date. It is expected that washing operations will commence at the end of this month.

Freiburg Mines.

A picturesque ceremony, attended by State officials, priests and miners, was held at St. Michaelis, Saxony, recently, to commemorate the closing down of the last of the Saxon State Mines in the famous Freiburg district, the final one to be shut down being that known as the "Himmelsfurst," at which mining operations have been continuously carried on for the last 350 years. The main output of the mines has been silver, of which over 5,000 tons have been produced since work at them was first commenced. In addition to silver, large quantities of lead, copper, arsenic, sulphur and zinc have also been produced. The closing down of the mines is due to various causes—partly to the fact that in many countries gold has replaced silver as the monetary standard, and partly to the great increase in the production on the American Continent, combined with low freights, having brought down the price of silver to such a point that operations at the Freiburg mines can no longer profitably be carried on.

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C.S.W.A. Diamonds.

H.M. Consul at Luderitzbucht, German South-West Africa, reports that the output of diamonds from the German South-West African mines amounted to approximately 760,000 carats during the first six months of this year. Owing to labour shortage there will probably be a reduced output during the remaining six months, but unless steps are taken further to restrict the output the total production for 1913 should be about 1,500,000 carats, or about 50 per cent. more than last year.

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Mining and the Film.

A novel feature in connection with a city meeting occurred during mail week in London. The shareholders of Natomas Consolidated of California were called together, and after the Chairman, Lord Ribblesdale, had made a brief statement a cinematograph, which had been specially brought from America, was started. The whole of the company's operations were shown by means of living pictures, these being at the same time explained by Mr. S. L. G. Knox, vice-president and general manager of the company in California.

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Diamond Producers to Combine.

Reuter's correspondent at Berlin telegraphs: The newspaper *Berliner Tageblatt* says a recent interview of Dr. Solf, who was accompanied by two officials of the Colonial Office, with managers of De Beers in London, and Dr. Solf's subsequent stay in Antwerp, has led to the belief in interested circles in Berlin that an agreement is about to be concluded between the Diamond Regie of German South-West Africa and De Beers. Leaders of German producers, Mr. Stauch, director of the Colonial Mining Co., and Mr. Boedigker, of the United Diamond Mines, are at present in London. Both are advocates of co-operation with De Beers, the supporters of which point out that the Coetermann's group in Antwerp is not likely to compete for the next contract for German diamonds. Therefore, the paper says, in the interest of German producers who want to avoid a compulsory limitation of output, it is better to come to a timely arrangement with the London group. In this connection it is noteworthy that in a speech at a banquet on Thursday, Sir David Harris, speaking of the fall in the sale of diamonds, said this had been caused through the overstocking of the American market, in anticipation of an increase in the diamond duties. He did not attach much importance thereto, and he anticipated that the diamond market would be normal at the commencement of next year. He referred to the enormous output of diamonds in Africa, and to the position taken up by the different mining companies, and he felt sure that if these were reasonable and sensible, the price of diamonds could be maintained by regulation of the output for the benefit of a large number of employees. It was desirable that diamond companies should put their heads together and overcome the difficulties in connection with the output, which were not insurmountable.

TOPICS OF THE WEEK.

UNION GEOLOGICAL SURVEY IN 1912.

The publication of the annual report of the Geological Survey is always an event of the first importance to mining men, and as the investigations of the Survey become more and more concerned with the heart and hub of South African mining, naturally interest is considerably quickened. This year the West Rand bulks very largely in the report before us, which, in view of the importance and complexity of the issues involved, is not unreasonably late in making its appearance. Mr. Warington Smyth, as usual, contributes one of those informative little introductions, for which he is famous, and Dr. Kynaston, the Director of the Survey, facilitates the business of the reviewer by emphasising the salient points of the year's work. Dr. Mellor's labours on the West Rand were, of course, the feature of the year—a rough sketch map appearing elsewhere in this issue reproduces the result—and in reviewing them Dr. Kynaston points out that:—

> The West Rand offers an exceptional number of geological problems, concerning which opinion has long been divided, and in most cases the detailed mapping afforded a satisfactory explanation of the debatable points. Among the more important results of the work, it was found possible to locate with considerable certainty a number of important lines of fault, which are among the most significant structural features of the West Rand, and which have an important bearing upon the possible extensions of the Main Reef series in that area. In this connection, a fault which has been designated the "Roodepoort Fault" is perhaps one of the most important. Much of the prospecting which has been undertaken to the south-west of Roodepoort has been carried on in the immediate neighbourhood of this fault, which, by bringing the shales and sandstones of the Jeppestown series into contact with the quartzites of the Upper Witwatersrand system, simulates the natural junction of these rocks, which normally lies a short distance below the Main Reef horizon. The junction, however, in this case is not a normal, but a faulted one. The course of such well-known "markers" as the Government Reef and the West Rand shales was followed through the Western Rand, and their connection with the corresponding horizons in the Central Rand established. The structure of the country about Doornkop, to the south-west of Roodepoort, which has always been very obscure, was satisfactorily worked out and connected with the geology of the rest of the area. The detailed mapping further allowed of the construction of a section showing the normal succession of strata of the West Rand, which was found to agree closely in character and in the sequence of its members with that of the Central Rand.

From Dr. Kynaston we also learn that "it was found that, while the prevailing idea that the Witwatersrand system increased considerably in thickness on the West Rand was correct as far as the lower half of the lower division is concerned, the upper half showed little, if any, increase of this nature, while the upper division of the system is decidedly thinner than on the Central Rand. In this connection, one of the most marked features is the almost complete dying out of the Elsburg beds on the Western Rand. Much information regarding the Upper Witwatersrand system was also collected, which will be best dealt with when it is possible to compare it with that obtained from other portions of the district as the work progresses, and so to deal at one time with the Upper Witwatersrand system of the whole of the Rand." Dr. Mellor's work extends our knowledge of the lower horizons of the system beyond Roodepoort and Krugersdorp as far as they disappear below the rocks of the Transvaal system to the south-west, and discusses broadly those geological problems which have rendered that area one of the most difficult of any in this part of the Transvaal. Ever since the early days of the Rand the region between Roodepoort and Krugersdorp and beyond has presented many allurements to the capitalist, the engineer and the prospector, and many thousands have been spent in the endeavour to locate extensions of the Main Reef series in various parts of that country. Vast claim areas are still held in the hope of attaining this object. The information obtained by Dr. Mellor, as the result of many months of painstaking labour has thrown much light upon the geological situation in those parts, and he has, by means of his maps and drawings, given his solution of the many problems involved in a simple, clear and convincing way. There is much to be added, of course, to the framework supplied by Dr. Mellor, but the essential facts relating to the structure of the western Witwatersrand have been elucidated, and the detailed work which remains will be helped and directed to useful and reliable results by means of what has so far been accomplished by him. The key to the problems of the western Witwatersrand area is to be found in an accurate knowledge of the system of faulting which is responsible in that part of the country, even more than in the central Witwatersrand, for a great deal of complicated and puzzling stratigraphy. On his map, which shows broadly the main features of Dr. Mellor's more intricate mapping, the main lines of faulting and their consequences are prominently exhibited. It is impossible to do justice to so important and extensive a work as that under review within the limits that are available in this issue, and it must suffice, therefore, upon this occasion, to mention the outstanding features, leaving for later issues the consideration of what is involved in the acceptance of Dr. Mellor's general statements. Reference must be made, however, to those points in regard to which he is at variance with Dr. Carrick's reading of the geology of the West Rand. Much will be explained in this connection if we state briefly that what was taken by Dr. Carrick, and by Dr. Hatch who supported his view, to be the Hospital Hill slate is in reality the very similar West Rand shale. This error is much in evidence to the west of Middelvlei. The well-known Middelvlei inlier which was considered by Dr. Carrick to be a portion of the Botha Reef series, and which formed an important part of the reasoning upon which the Western Rand Estates theory was based, is looked upon by Dr. Mellor as showing Elsburg bankets. With Dr. Mellor's other conclusions we hope to deal next week. Extracts will also be printed from some of the other important sections of the report.

ROCK DRILL ECONOMICS.

Quite the most important paper read before the South African Institution of Engineers recently was that of Messrs. E. G. Izod and E. J. Laschinger on rock drill economics. These gentlemen are well-known engineers of the Central Mining-Rand Mines group, and they have been engaged for some time in conjunction with Mr. W. Calder, of the Village Main Reef, in studying air consumption and maintenance costs of rock drills. The results of their labours and investigations are, to say the least of it, startling, and, as Mr. J. A. Vaughan said in discussing the paper, the whole Rand is now able to profit by the researches of the Corner House engineers. The practical nature of the results won is shown by the fact that the savings effected by the Central Mining-Rand Mines group last year on the basis of 75,000 rock drill shifts a month was no less than £62,000 in air costs, and in maintenance costs about £105,000. These economies are credited simply to the application of commonsense principles to rock drill practice. The paper, which is far too lengthy, detailed and enriched with statistics to attempt to summarize here, shows only too plainly the need for closer study of rock drill economics. For instance, one of the tables attached to the paper shows that for December, 1912, the Central Mining and Investment Corporation increased the number of their rock drill shifts, as compared with January, 1912, by 4,619, and yet made a saving of 1,205,038 air units. Taking ten tons of rock broken per machine per shift as a fair average, this meant that the air saved was equal to the requirements of five mines of similar tonnage to, say, the Witwatersrand mine. This means, as Mr. Calder pointed out, that these mines would get their air for rock drill purposes free of cost—in other words, could shut down their compressors. As regards maintenance, comparing January with December, another table shows that a saving of 51s. for every 52 machine shifts worked was obtained. The point is that the figures are absolute fact. These savings are being effected, and the money gained placed to the credit of the shareholders in the companies concerned. As showing the magnitude of the compressed air question, Messrs. Izod and Laschinger point out that the Rand Mines Power Supply Company, Limited, has installed at present compressed air plant of an aggregate capacity of about 50,000 h.p., and that plant of an additional capacity of about 30,000 h.p. is in course of construction and erection. Since the air power used on the Rand is intended primarily for actuating rock drills, it is obviously very important that the air consumption of these machines should be very thoroughly studied by engineers. In times past, economy in the use of compressed air was not considered very important, because it was in many cases absolutely essential to use this air for ventilation, as no other means of introducing fresh air to various parts of the mines existed. This state of affairs is now disappearing and the authors express the opinion that the sooner compressed air is no longer required for ventilation the better. Adequate ventilation by compressed air is too expensive. They also record their conviction that comparatively little is known about rock drills, even by engineers who should know a good deal about them and that if these machines had received a fraction of the thought and attention bestowed upon machine tools in the fitters', carpenters' and boilermakers' shops, the history of the development of the rock drilling machine would have been a very different story and the machine itself would have attained a state of perfection and economy unknown to-day. The mines under the control of the Central Mining and Investment Corporation, Limited, and the Rand Mines, Limited, purchase nearly the whole of their air power from the Rand Mines Power Supply Company, Limited. This air power is measured by air meters which were carefully calibrated before being installed and are under constant supervision and frequently checked. The air power is purchased on the basis of a " unit of compressed air." The fact that large savings in the air power bill of the mines may be effected by paying attention to this matter of air consumption is proved by tables, which show a progressive diminution of the air power required on the mines of the Central Mining-Rand Mines group for 1912. The improvement as between January and December shows a saving of over one shilling per machine shift in the air power cost. This improvement has been maintained during the present year, 1913, and there is no doubt but that, when the various large ventilation schemes now being carried out are completed, the consumption of compressed air will be further materially reduced. The method of assessing work done by the arbitrary standard of the 3¼ in. machine shift adopted by the group, is admitted by the authors of the paper to be somewhat crude, but it was devised as a beginning for making comparisons to suit present conditions on the Rand. A thorough and true basis would be arrived at by measuring the air power consumed at each point where work is done and an exhaustive treatment of this investigation would certainly be rather expensive. When it comes to the practical application of investigations of avoidable losses and the compilation of statistics to show where improvement should be effected, they point out that a balance must be struck between the costs of obtaining the data and the amount of savings that can result. They are strongly of opinion that separate air meters should be permanently installed on each working level of a mine and at each point where air is used for specific services. This would enable the engineer to find out at once where air was being wasted or used in apparently excessive quantities. Strict investigation at particular points could then be carried out and leakage or waste hunted down to its source. There is hardly need to mention that a proper organisation of staff with instruments and power of investigation would be incurred. If, however, one reflects on the elaborate organisation dealing with the electric power on the mines it is certainly surprising that the air power is not attended to in the same way. The authors go on to declare that every mechanical engineer on a mine is, or ought to be, responsible for the condition of the drill (mechanically considered) before it goes down the mine and for the repairs and renewals which are made from time to time. The rock drill, of course, has rough work to do, is roughly handled by persons who, in many cases, have no mechanical knowledge, and it has to work under the severest conditions that test any machine and militate against economy over a prolonged period. In this connection reference is made to the system of rock drill maintenance introduced some five or six years ago at the Village Main Reef Gold Mining Company, Limited, and for which Mr. Calder is mainly, if not solely, responsible. This system consists of bringing up every drill from underground to the rock-drill fitting shop regularly, overhauling the drill thoroughly in all its parts and particularly in finishing up the cylinders with reamers, and grinding down the pistons to an accurate fit within a few thousands of an inch, and thus standardising cylinders and pistons. Besides this, a record is made of each machine in a book kept for the purpose, and when from the records it appears that a machine has been in the mine for longer than three months, that machine is brought to the surface for overhauling, whether the miner likes it or not. There is no doubt but that the enforcing of this system has given this mine its fine record on air consumption. As the monthly records of air consumption compared with machine shifts at the Village Main Reef showed better results in regard to the use of air than those at other mines, tests on a practical scale were undertaken at various mines in order to judge whether the economy was due to the systems of rock drill repair in vogue at various mines. It was found that on the Village Main Reef G.M. Company, Limited, a system had been in use for some years of placing the repair work of drills on contract, based on a certain price per 52 machine shifts, for which price the contractor, who is usually the rock drill fitter, had to be responsible for the purchase of spare parts, keeping drills in order, preventing waste of material, etc. The cost of keeping the drills in order at the Village Main Reef was generally so much lower than the average, that the Village Main Reef system was carefully investigated and a model form of contract was drawn up for the other mines. The contract system was then put into operation gradually on several of the other mines, and the results have been particularly satisfactory. The costs have fallen in about 20 months from an average of 175s. per 52 machine shifts to a figure of 113s. per 52 machine shifts. The Village Main system, which, after all, is a commonsense contract system, was slightly modified in one or two cases to suit different conditions on other mines, and generally adopted by the group. The main advantages of the contract system for repairing drills are threefold:—(1) It stops waste of spare parts and connections; (2) it stops waste of air by systematically re-conditioning drills and preventing the great air leakages which existed when drills were allowed to run on indefinitely; (3) it has called attention to defects in the stores system and handling of machines. In concluding, the authors point out that in the past probably one has looked upon the rock drill as a piece of mechanism which, so long as it will drill, need not be worried very much about, but when the cost of air and the drilling speed are taken into consideration, it can be proved that it is a commercial proposition to pay as much attention to the upkeep of drills as the upkeep of winding engines or compressors. Generally, with regard to the question of drill maintenance, they suggest that a fair average standard of cost, provided drills are really systematically kept in first-class order, should be about 90s. to 95s. per 52 rock drill machine shifts, including hose, and it will be found that, if this figure can be obtained in practice, there will, in most cases, be a very considerable saving effected in the cost of keeping drills, over the old system. Many details in connection with this question of maintenance of drills were regarded as beyond the scope of the paper, but the authors say they will be only too pleased to give to those who are interested in this question of economy any further information which they may require. They add that the object of the paper will have been accomplished if interest in the subject is stimulated and a thorough discussion follows during which, it is hoped, fresh facts and figures will be given and ideas interchanged for the benefit of the mining industry.

THE NEW MINING REGULATIONS.

Inoperative and Impracticable Legislation—Salient Features Reviewed.

It is impossible to analyse the new Mining Regulations without feeling that they represent a very strenuous endeavour on the part of the Government to minimise accident and death rates in the mines of the Union, and particularly those of the Witwatersrand, and to improve working conditions and remove much of the discontent that, rightly or wrongly, has hitherto prevailed in and on the mines. It is impossible also to study the numerous amendments of and additions to the hitherto existing regulations without feeling that in their attempts to achieve these objects and to conciliate the Labour Party the Government is likely to defeat its own aims by over legislation. Mining all the world over is a branch of industry inseparable from risks which are notoriously absent from many other callings, and however much one may desire to eliminate all risk to health and life and limb in mining, it is manifestly impossible to do so. That, of course, is no reason why efforts should not be made to minimise that risk, but where we find fault with the new laws is that by their very preciseness and thoroughness many of these regulations must be regarded as inoperative. Experience has abundantly proved that respect for the spirit of the law is much more satisfactory than respect for the letter of a law which is in many instances impracticable of strict observance. Too many regulations, too insistent and rigid determinations of what may legally be done and what may not legally be done, are only likely to stifle initiative. Experience and the simple recollection of a technical practice are the factors which really count when immediate action is required in a mine, and whilst precautionary legislation is very admirable up to a certain degree, precautionary measures can easily go too far and become mere encumbrances to experienced reason.

Impracticable Regulations.

To anyone who has much knowledge of mining it will be obvious how very impracticable some of these amended regulations are. Thus, regulation 105 (3) (c), which has been amended, now reads: " In the operation of drawing timbers on roads and airways exceeding six (6) feet in width, the person engaged in drawing timbers shall stand under the protection of other well secured timber or safe ground," and Regulation 105 (3) (*d*) reads: " In addition the manager shall supply, in every section or sub-section of the mine in which timber is to be drawn, the following tools, so that the person engaged in drawing the timbers may avail himself of any one of them if he considers it necessary for safety:—(i) Axes or hammers with handles not less than three (3) feet long. (ii) Punch bars not less than six (6) feet long with spikes and hooks. (iii) Lever and chain prop drawing machine." How many instances in every mine could be cited where it would be impossible to draw timbers and at the same time " stand under the protection of other well secured timber or safe ground," even with punch bars 12 feet in length?

Shaft Sketches.

As an instance of legislation carried to a ridiculous degree, look at " Regulation 100," which has been amended and now reads: " (*a*) Before drilling is commenced in any shaft in the course of sinking, all the ground within three (3) feet of any hole to be drilled shall be blown over with compressed air or with water under adequate pressure, so as to expose all misfires and sockets, and a sketch shall be made showing the position of such misfires and sockets. (*b*) In vertical shafts, blowing over and the preparation of the sketch shall be done under the immediate supervision of the manager or mine overseer or of a shiftboss, or other duly appointed official, unless exempted by the Inspector of Mines, and in incline shafts such official shall satisfy himself by personal inspection during the shift that the blowing over and the sketch have been properly done. (*c*) In winzes and drives the faces shall be blown over with compressed air or water under adequate pressure to expose all misfires and sockets, and the manager, mine overseer, shiftboss, or other duly appointed official, shall satisfy himself by personal inspection during the shift that this has been properly done. (*d*) Every sketch made in terms of sub section (*a*) of this section shall be kept in the mine office for at least seven (7) days." We would suggest that sketches, unless drawn by properly qualified draftsmen (further legislation seems necessary here) are not likely to be sufficiently accurate, and we would advocate that photographs should be taken, cameras having lenses of certain approved photographic values (here another clause appears to be required) being employed.

Lamp-Cleaning Machines.

Here is another section which invites comment:—" (2) At every colliery using more than two hundred (200) safety lamps a mechanical lamp-cleaning machine shall be installed and arranged in a manner ensuring systematic cleaning and examination of the gauzes, glasses, washers, and all the essential parts of the lamp, both before and after it is fitted together. (3) All repairs to safety lamps shall be conducted in a separate room or compartment of the lamp room or cabin." We believe that in Wales " mechanical lamp-cleaning machines " have been tried, and have been discarded as unsatisfactory, and where tried in Natal collieries have not been very popular.

More Convictions Required?

Some of the amended regulations have doubtless been the consequence of recent prosecutions by the Mines Department. Thus one sees in Regulation 158 (10) the result of the Crown Mines case of a few months ago. This is now worded as follows: " In no case shall the ganger or miner have charge of workmen scattered over more places than can be visited, without undue exertion, within the course of forty (40) minutes." We might here venture the comment that in regard to coal mines forty minutes might well be extended to fifty minutes or an hour. One interpretation we place upon the new regulations is that officials of the Department of Mines are determined to secure more convictions and easier convictions against mine officials who have transgressed some section of the new laws of precision. Thus, Regulation 61 (5) now provides that " any unsatisfactory conditions " shall " then and there be " entered in a notebook. The man on the mine will thus collect material evidence against himself.

Agreements between Miner and Manager.

Regulation 122 has been deleted and the following substituted therefor: " (1) In all cases where the payment of a miner for the making of excavations in a mine is to be based upon a unit of area or of length excavated a written agreement, of which a signed copy shall be handed to the miner, shall be entered into between the miner and the manager. (2) Such agreement shall clearly set out—(*a*) The class and locality of the work; such locality in the case of tunnelling to be further indicated by stating the distance of the face from an accurately replaceable survey point marked by a plug, and in the case of stoping to be further indicated on an accompanying plan drawn to a scale of 1 to 200 on the plane of the ore body and divided into squares representing a fathom each, showing the face of the stope and also each line or point from which measurements to the face have been taken, and when these lines or points have not been marked as provided for in Regulation 132, then connection with two such marked points shall be shown. The date of such survey shall be shown on such plan, and if such date does not antedate the date of the agreement by more than six working shifts, the amount payable in respect of the work done between the date of the survey and the date of the agreement, not exceeding the amount of earnings, wages and stores, shall be mutually agreed upon and entered accordingly on the agreement. (*b*) The price per unit. (*c*) The charges to be made for the chief items of stores and labour. (3) No alteration shall be made to the prices and charges set out in such agreement except by mutual consent or unless at least twenty-three (23) days' notice of the proposed alteration be given by either party to the agreement." In the above it is noticeable that twenty-three days has been substituted for a month.

OTHER CONSIDERATIONS.

For the rest it may be remarked that in Regulation 293 (b) the price of a blasting certificate has been raised to ten shillings, and that there is nothing in the new regulations which tends to bring the Transvaal and the Orange Free State more into line with the Cape Colony and Natal in regard to the "colour bar." As to the period of duration (30 minutes) to be occupied in taking men to or from their work, we learn that certain mines, on account of depth, have already obtained exemption certificates on these grounds, but that the majority of companies are rigidly conforming with the new law. In concluding this necessarily brief review of the new regulations—they form a twenty page supplement to the *Government Gazette*—we cannot refrain from commenting on the ultra-Utopian demands exhibited in Regulations 10 (1) and 61. The first of these now reads: "(1) Any shaft, drive, stope or other excavation of any kind whatsoever, which is in use in connection with the working of a mine, shall be made and kept safe for the persons working in such mine, and no person, except for the purpose of exploring or repairing or making safe, shall travel or work in any such shaft or underground working until it is made secure. The ganger or miner in charge of exploring or repair work or in making the place safe shall take all reasonable precautions that the persons under his charge are secured against falling hanging and other dangers whilst carrying out such work." Regulation 61 is now: "No person shall work or remain or be permitted or ordered to work or remain in any place in a mine if the air contains dust, smoke or fumes perceptible by sight, smell, or other senses." We believe the practical effect of these regulations, if enforced to the letter, would be the closing down of every mine on the Rand. There is no such thing as real security in any mine; moreover, it has been our experience that in practically every mine and every section of a mine, whether here or anywhere else, the occasions when dust, smoke or fumes are not perceptible to the senses are very rare indeed.

LAND SETTLEMENT!

Beware of "Boom" and "Bogus" Schemes— An Advance Note of Warning to the Public and Prospective Settlers.

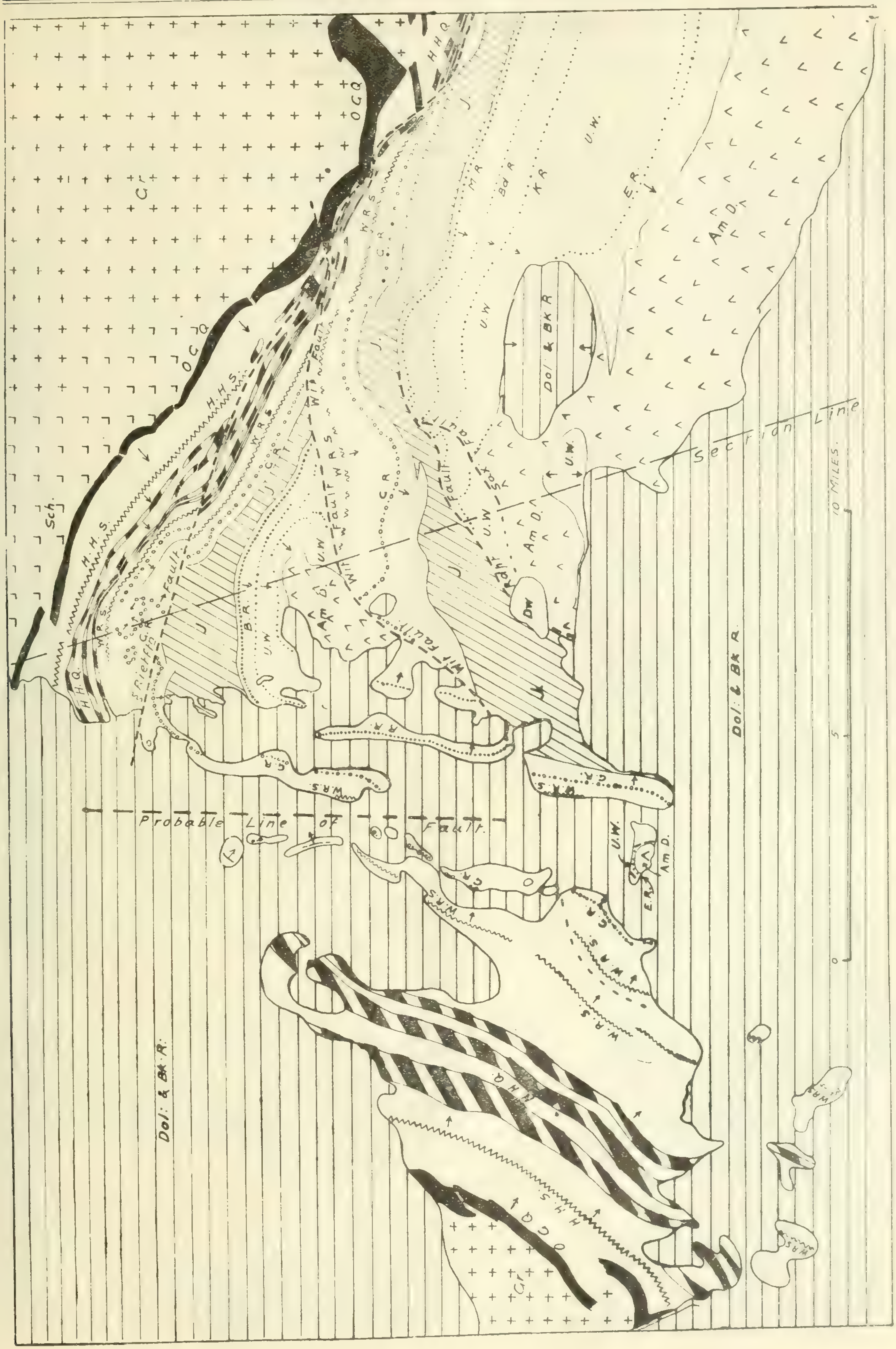
SIGNS multiply daily that South Africa is on the eve of a big stride forward in agricultural and pastoral development. Everywhere, and in all walks of life, men's thoughts are turning towards the soil. Congresses vie with one another in calling attention to the untried and unlimited potentialities of farming of various descriptions and under divers conditions. The papers, week in, week out, harp upon the great undeveloped market that the country provides for its own produce, and lengthy black "lists" of what we might, but do not, produce for our own consumption appear with painful frequency. Public men of the progressive sort find no more congenial or fruitful subject to interest their audiences than this question of the land. Everybody wants land. The farmers' younger sons want to begin where their fathers left off—with a property of their own. Thoughtful men in the towns, recognising that the future lies with the men on the soil, listen with avidity to everything and anything that may make it less difficult for them to get "back to the land." Even the miner, the much-reviled "bird of passage," has found in the glittering agricultural possibilities of the country a new incentive to save, and a serious, because more healthy, competitor for his savings than the sharemarket or the racecourse. Plainly, the moment is ripe for the launching of sound and rational land schemes. Everything lies in the qualification. Better no schemes at all than bogus ones built on the credulity and ignorance of the would-be settler. The history of all such movements teems with warnings against the wiles of the land salesman unscrupulously exploiting innocent land-seekers for his own gain. That way, for the settler and for the country, disaster lies. At times such as this the prospective landowner must be protected against himself and against the harpies who would prey upon him. We are glad to find that this aspect of the movement towards the land has so impressed itself on many of those identified with its inception and encouragement that it is felt by them that it is most necessary to issue warnings against the operations of the land sharks and speculators on the one hand, and, on the other, to explain to intending settlers what information about a proposed holding should be definitely secured by them before making a decision. To this end we understand that a pamphlet will shortly be issued, the instructions of which, if carefully followed, will enable any intelligent man to decide whether the land proposition before him is a reasonable one or not. The pamphlet will be the work of persons fully qualified by practical experience in South Africa to give most valuable advice and assistance. It will not be controlled or influenced in any way by those interested in the sale or other disposal of land: it will be issued gratis, and if, in spite of such available help, people allow themselves to be taken in, they cannot escape the charge of gross contributory negligence. We know of no better way than this in which those already on the land could help their less fortunate brethren anxious to get there. As the pamphlet in question is expected to make its appearance next week, and as its advice and warnings are couched in such plain, unambiguous terms that he who runs may read, we will content ourselves here with saying simply, look out for it. We hope to refer to it further on its appearance.

Zaaiplaats Tin.

The results for the month of October, 1913, are as follows:—Days run, 28·7 days; ore milled 2,894 short tons; residues retreated, 182 short tons; concentrates won, 107 long tons; average value of concentrates, 69·24% M.T.; estimated profit for the month, excluding Government tax on profits, £7,019 5s. 11d.; less adjustments in respect of estimated values of previous shipments, £119 6s. 6d.; profit declared for the month, £6,899 19s. 5d.; capital expenditure, nil.

Greig Diamonds.

We are informed that Mr. William Murray, the manager of Greig Diamonds (Schweizer Reneke Town Lands, Ltd.), writes under date October 29: "Messrs. E. W. Tarry & Co. report the completion of the plant, and that they expect to despatch same from Kimberley to the property on October 30." The plant should arrive at Schweizer Reneke early this month, and as all foundations, etc., are ready on the property, the gear should be erected within the course of ten days after its arrival, and a trial run should be able to be made about November 21. A large amount of "wash" is now extracted and ready to be put through the big pan, and once the pan is started the management has no fear of any stoppage owing to want of gravel.



SKETCH MAP OF THE GEOLOGY OF THE WESTERN WITWATERSRAND (AFTER E. T. MELLOR) IN THE GEOLOGICAL SURVEY REPORT FOR 1912 ISSUED THIS WEEK.

DIAMOND COMPANIES AND SYNDICATES.

A Brief Directory of Concerns Now Attracting Notice.

I.—PARTICULARS OF HALF-A-DOZEN INTERESTING VENTURES.

THE lethargy of the Johannesburg Stock Exchange has in some little way been dissipated by the activity prevailing in certain diamond stocks which are now attracting much public interest. Some of these concerns are revivals of old mines, others are newly-discovered propositions, and one or two are alluvial propositions. In view of the general interest now being taken in these concerns, we this week give the first portion of a brief directory of the diamond companies and syndicates now bulking largely in the public mind, as we are constantly being asked for particulars of capital, directors, etc. This week we deal with the following concerns, viz.:—Pilandsberg Diamonds, Greig Diamonds, National Diamonds, Harrisdale Diamonds, Roodeplaats, and Buffelsdrifts. Particulars of other concerns will appear in our next issue.

PILANDSBERG DIAMONDS AND MINERALS, LTD.

Capital: £25,000 in £1 shares, issued £20,425. *Directors:* J. Dale Lace (Chairman), L. Edwards, C. A. Lagesen. *Secretary:* T. L. Day. *Offices:* Lace Buildings. *Manager:* J. R. de Villiers. *Property:* Option over farm Saltpetrepan H. 119; district Herbert, Cape Province. *Operations:* Machinery in course of erection and property being opened up.

GREIG DIAMONDS (SCHWEIZER-RENEKE TOWN LANDS), LTD.

Capital: £16,000 in 64,000 shares of five shillings each, allocated as under:—Vendors, 44,000 shares; working capital, 8,000 shares; in reserve, 12,000 shares. *Directors:* H. J. Filmer (Chairman), Thos. Greig, W. T. Hallimond, Tom Bell. *Secretary:* J. R. Andrew. *Offices:* National Bank Buildings. *Manager:* Wm. Murray. *Property:* Company has acquired lease in perpetuity over 1,650 claims (being owners' and discoverer's claims) on the town lands of Schweizer-Reneke, subject to a payment of 10 per cent. of the net profits earned to the Village Board of Schweizer-Reneke. In the event of the town lands being proclaimed a public digging a further large area will accrue to the company. It is understood there has been an idea to proclaim 300 morgen. In this event the Greig Diamonds Company would have the right to a further 4,500 claims. Washing gear is in course of erection.

THE NATIONAL DIAMOND PROSPECTING AND DEVELOPING SYNDICATE, LTD.

Capital: £140,000 in 10s. shares (including 2,500 preference shares); in reserve, 10,000; vendors, £10,000. *Directors:* John Z. Back (Chairman), C. P. Heydenrych, M. Manson, N. J. Swanepool. *Secretary:* Francis A. Dunlop. *Office:* 15, Transvaal Bank Buildings, Fox Street, Johannesburg. *Manager:* R. G. Burnett. *Property:* Farms Reitfontein No. 501 and Kaalfontein No. 402, district Pretoria. Washing proceeding.

HARRISDALE DIAMONDS, LTD.

Capital: £20,000, in 5s. shares, of which £5,000 are for working capital. *Directors:* W. E. Bleloch, Transvaal Bank Buildings, Johannesburg; J. H. Rainier, Stock Exchange, Johannesburg. *Secretary:* J. S. Richardson, Transvaal Bank Buildings, Johannesburg. *Property:* Harrisdale Estates, comprising the farms Harrisdale, Romance and Williamstown, in extent about forty square miles, situated 18 miles north of Kimberley. *Operations:* (1) Opening up extensions of the Mayers sluit or fissure, and washing ground with a 4½ ft. pan from the prospect places. At the first place opened a 3 carat stone of finest quality was found, value £30. Locating extensions of this well-known rich occurrence is the first work to be undertaken by the company. (2) Opening up a mine which has been located and is believed to be on the line of the Barkly fissure. A shaft is being put down fifty feet in the yellow, and then crosscuts will be driven north, south, east and west, and sufficient ground extracted for a test washing. The yellow now being taken out looks well, and carries good deposit. No washing has yet been done, but the ground for the test washing should be ready in about a fortnight. (3) Locating other pipes and fissures, of which there are good indications at several different places. (4) Developing the various diggings on the property, which are very extensive and carrying diamonds in payable quantities. Recent records show £2,415 value recovered, for 2,775 loads. (5) Opening up water supplies for the inland diggings. *Plant:* The company owns pumping plant, comprising suction gas producer and engine (Davy-Paxman), Worthington 3-throw high lift pump, 1,200 ft. 6in. steel piping; steel tank, capacity 30,000 gallons. The plant can pump 10,000 gallons an hour. Washing plant, comprising 7 ft. rotary pan with set of rolls, cylinders and elevators complete, 8 h.p. oil engine, trucks, rails, and other accessories. Prospecting plant, comprising 5 ft. rotary pan, 4½ ft. rotary pan, with Bebes tanks, etc. The property was recently examined by Dr. Merensky and also by Mr. J. F. Davies.

BUFFELSDRIFT DIAMONDS, LTD.

Capital: Nominal, £30,000; 5s. shares. *Directors:* C. A. Lagesen (Chairman), M. Hathorn, A. U. Bourne. *Property:* Honeynest Kloof and portion of Welkopslaagte, 3,400 morgen. *Secretary:* T. E. Duckles.

ROODEPLAATS (DE BEER) DIAMOND MINES, LTD.

Share capital: £150,000, in 150,000 shares of £1 each. 100,000 shares of £1 each have been allotted, as fully paid up, in full payment of the purchase consideration, 40,000 shares have been allotted at par to provide working capital, and 10,000 shares are held in reserve for future issue to provide further working capital. *Directors:* C. A. V. Conybeare, Esq. (Chairman), Chairman of the Oceana Development Co., Ltd., The Diamantfontein Development Syndicate, Ltd., etc.; A. A. W. Grist, Esq., Director of the Oceana Development Co., Ltd., The Diamantfontein Development Syndicate, Ltd., etc.; Dr. H. M. Eagleden, Johannesburg, South Africa; Emil Kumst, Esq., Managing Director, Kumst Diamond Company, Johannesburg, South Africa; W. Wells, Esq., of Kimberley, South Africa, and Linton Mansions, Hampstead, N.W.; W. Wilkinson (Greig & Wilkinson), Johannesburg. *Consulting Engineer:* F. F. Wells, Pretoria, South Africa. *Manager:* B. Gaum. *Secretary and Offices:* C. J. Avery, 2, Great Winchester Street, E.C. The company has been formed to take over the assets and undertaking of Kumst Diamonds, Limited, a company registered in South Africa. The Kumst Diamond Mine is situate on that portion of the farm Roodeplaats, known as "De Beer," about seven miles distant from the Premier Mine, and consists of about 600 acres.

Opstal Diamonds.

The Secretary of the Opstal Diamond Syndicate, which was recently formed in Benoni, and which has gone to allotment, has received a telegram from the prospector who is at present on the property, which is situated near Phillipstown. The message reads: "Struck blue ground; inclined shaft of 26 feet." This indicates that blue ground has been struck at a depth of 58 feet below the surface. It is expected that a satisfactory report will be forthcoming soon, as diamonds have already been found in the yellow ground deposits which have been taken from this same shaft, and which ground experts have expressed themselves favourably impressed with.

At the annual meeting of the Newcastle Colliery Company, Ltd., held in Natal recently, the directors' report showed that there had been an increase of 2,948 tons in the output for the year. The expenditure and revenue account showed a profit on the year's working of £7,414 9s. 1d., which with £7,838 10s. 4d. brought from the previous year, being carried to the appropriation account, and depreciation, dividends and profit tax deducted therefrom, a balance of £9,471 5s. 8d. is carried forward to next year. The Chairman (Mr. J. G. Kemp) stated that it was anticipated that they would continue to pay yearly dividends, and the matter of the creation of a reserve fund would have the immediate and careful consideration of the directors.

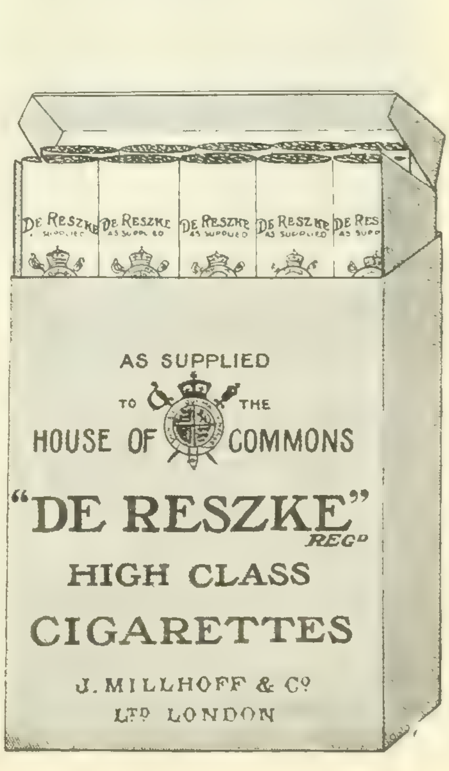
RESCUE WORK ON SOUTH AFRICAN MINES.

Findings of the Natal Commission—Gassing Accidents on the Rand and the Use of Oxygen.

[By a Special Correspondent.]

When the present sitting of the Rescue Station Commission in Johannesburg is concluded, their report will, doubtless, follow within a few weeks. It is only natural to expect that the Commission will urge the Government to equip a railway van with oxygen appliances, etc., and have this van stationed at Hattingspruit (the most central railway depôt for the Natal collieries), where, perhaps, a permanent station may also be built, equipped with a practice gallery, gymnasium, reading room, etc. Here officials and miners could receive certain training. This would be filling a long-felt want in the Natal colliery district, and a station similarly equipped would be welcomed at Witbank. The Commission has doubtless discovered that the Mining Regulations requiring two sets of rescue apparatus to be kept at each colliery is totally inadequate, and that at least five sets should be kept at each pit, so that one full corps can be equipped with oxygen helmets by the mine itself. Also that the regulation requiring each colliery to have one air-mask with hose and bellows or reducing valve for connection to the compressed air pipe, is unnecessary, because of its impracticability, and should be rescinded. There is not one occasion in a thousand where this apparatus can be of any service. Rescue work is a science which is only young, and even now very little is known of it. Experiences are constantly happening which add fresh data to work upon. For instance, in the United States of America it is lately found that not only is it necessary to drill the rescue corps in the methods of working under oxygen, but also to instruct the whole of the colliery workers underground, in the various mine workings, particularly as regards the good air passages. They are taught to rigidly avoid the return air circuit, and also all parts of the mine where the roof is bad or treacherous, and at all times to enter or leave the workings by means of the good air roads. Where this training would probably have done a vast amount of good was instanced in the recent Universal Colliery disaster, in South Wales. Among the sixteen rescued was a little lad of fifteen years. When he felt the " sudden rush of hot air and dust " (which was his description of the explosion) and smelt " stink," he made for an air-hole which he knew of, and here the rescue party found him. Those working round about him were suffocated. Had these men known of this air-hole, some of them at all events could have reached it and been rescued. This bears out the wisdom of the American methods, and will doubtless be incorporated into the English system in the near future. At all events this system should be rigidly enforced in South Africa, and all underground workers in collieries, both whites, natives and Indians, should be made thoroughly " au fait " with the fresh-air ways in their particular mine. Consequently, when matters are far enough advanced as to warrant the employment of a rescue station instructor, this point should be borne in mind and only a man experienced in local conditions (which differ vastly from conditions obtaining in England or America) and able to control coloured labour, as well as having an expert knowledge of oxygen appliances, should be appointed. As a matter of fact the Government would do well to appoint an official forthwith, possessing these requirements, and send him on a tour of investigation through the United States and Europe, where rescue vans have been in use some time, and later through England. A full report could thus be made by the expert and plans drawn up from it, suitable for South African conditions. Thus South Africa would benefit from the experience of other coal centres, and the cost of obtaining the information first hand would doubtless be saved many times over.

The frequency with which gassing fatalities occur on the Reef shows that training in the use of oxygen appliances is badly needed on the gold mines. Our mining, metallurgical and engineering practice is thoroughly up-to-date, but when we come to an all-important branch such as oxygen training, a subject in which other countries are wonderfully ahead, it can only be admitted that we are totally behind the times. The mines are well equipped with oxygen reviving apparatus, but how many of the officials or men understand the use of these? In the case of a gassing accident, on many of the mines it is the custom to administer an emetic rather than give the patient oxygen, particularly in the case of a native. If these appliances were properly understood the number of deaths from gassing would be considerably reduced. The total number of deaths in this manner, if published, would cause food for serious reflection, and there is no doubt that with training this death-rate could be greatly diminished. What is wanted is efficiency and the ability to make proper use of the appliances. The deep levels and deeper-deeps, for their own safety, should instal five sets of rescue apparatus, and have a trained corps of men efficient in the use of these at each mine. With these appliances members of the corps could enter any fumes. At least two sets of these should be kept in a dustproof and waterproof case, on the bottom level, and should be regularly inspected by the shift boss. At a convenient place to a dead-end an oxygen reviving apparatus should be kept handy, in case of emergency. All miners on the bottom levels, as well as samplers, shift bosses and mine captains, should be made thoroughly conversant with the use of these appliances, both the helmet and the reviving apparatus, so as to be able to carry out any rescue operations at the least notice, and a man's blasting certificate endorsed accordingly. The training could be done by an official appointed by the Chamber of Mines, whose duty should be to call on every mine and give instruction in these appliances. With the mines combining in this important matter the cost to each mine would be very slight, averaging about £3 10s. per mine per month, and this could be paid out of the benefit society funds. Thus at a slight cost an efficient corps of men could be had on every mine from Randfontein to Springs, which would certainly mean a decreased death-rate as far as asphyxiation is concerned.



THE MESSINA COPPER COMPANY.

A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

III.—THE CONCENTRATION PLANTS.

In the earliest days of Messina the production consisted of extremely rich selected ore, which was bagged, and transported to Pietersburg by donkey wagon and sold in England in this state. But as the mine continued to open up well the advisability of installing treatment plant became evident, and about the middle of 1908 a concentration plant of 50 tons per day capacity was started up. This plant, which has rendered excellent service, has to date produced concentrates having a total value of a third of a million sterling. A few weeks ago a new mill, designed to handle from 250 to 300 tons of ore, was started up, and this, too, is running well and smoothly. Erection of the new installation was amply justified by developments in the mine, and the fact that completion of the railway would afford facilities for the handling of a much larger output than previously had been practicable. Before deciding on the type and capacity of this new plant, the whole question of copper production in the Northern Transvaal, the nature of the ore, and the latest practice at copper fields in other parts of the world were most carefully investigated. The result is that the mine is now equipped with a milling and treatment installation which is in every way modern, efficient and economical as regards labour and the cost of running and maintenance. This plant, in conjunction with the old mill, gives the company a treatment capacity of about 350 tons per day, and in addition to this there is the output derivable from very high grade ore which is sorted out at surface. The new mill is in reality a large edition of the old plant, and to which have been added various new devices, so that a description of the recently completed installation will suffice to indicate the general principles of treatment obtaining at both plants.

Messina: Ore Sorting Conveyor at New Concentrating Plant.

The New Mill.

The new plant is situated immediately to the north of the No. 4 and No. 5 twin shafts, and is located on ground having a slope favourable to gravitation to the north. The general scheme of treatment is as follows:—Rock is discharged from an ore bin on to a 30-inch picking belt conveyor, where it is sorted according to waste rock, rich picked ore, which is taken to the bagging yard, and the balance of ore which is passed through a 40-inch revolving screen. The undersize from this screen goes to a fine ore bin and then to a shaking tray feeder, from which it is elevated by 14-inch bucket elevator to four 36-inch diameter trommels. The oversize from the revolving screen goes to a tray conveyor, thence it is crushed by a 15in. by 9in. Blake crusher. The product from this goes to an ore bin and is then led by a shaking tray feeder to a set of rolls. The rock from these rolls is elevated to another set of four 36in. diameter trommels. The oversize from the first trommel in each set passes into 30in. by 16in. rolls, and is then elevated to one set of trommels again. Oversize from the second, third and fourth trommels in each set passes into the Hartz and slide jigs, of which there are ten, together with the oversize from the King type screens, which treats the undersize from the last trommel. Product from the jigs is dealt with thus:—

Concentrates.	Middlings.	Tailings.
Bin.	Bin.	Dewatering device.
Bagging Yard.	Bucket Elevator.	Belt Conveyors.
	Huntingdon Mill.	Dump.
	Frenier Pump.	

Pulp from the Frenier pump enters two Janney classifiers with the undersize from the two King type screens. The product of the Janney classifiers is dealt with as follows:—

Overflow to Three 8ft. Callow Tanks.		Spigot discharges to Wilfley Tables.
Thickened Pulp 10 Frue Vanners.	Overflow to waste.	

The whole of the machinery for the concentrating plant has been supplied by Fraser & Chalmers to the consulting engineer's designs.

The Old Equipment.

The treatment by crushing, screening and jigging discussed in the foregoing is in accordance with the best known practice for producing the coarser mineral as clean concentrate, whilst the installation for concentration, including Wilfley Tables and Frue Vanners with classifiers, enables the company to make a high extraction from fine products. The Huntingdon Mill is employed for regrinding current middlings, and will also be used for tailings if found advisable. About 20 per cent. of the ore reaching surface is rejected on the sorting belt as waste. A few facts and figures regarding the working of the old plant—which, by the way, has worked up to a capacity of 2,000 tons per month—

should here be of interest:—The old mill has been driven by a Tangye suction gas engine of 110 h.p. This engine has run for fully five years very successfully. It runs without stoppage from Monday morning to Sunday morning, when the mill is stopped for repairs and general clean-up of the gas plant. The engine drives the whole mill, including the sorting belt 10in. x 7in. rock breaker, two 24in. x 12 rolls, one 8in. bucket elevator 42ft. high, four trommel screens, and four 3-compartment jigs, one return water 4in. centrifugal pump, throwing about 250 gallons per minute 50ft. high, and two Wilfley tables. It also drives a small 3-drill compressor and a small 7 h.p. lighting dynamo. This total is reckoned to be about an average of 85 h.p., and during the month the charcoal consumption is 740 bags, which at 2s. per bag is equal to a total of £74. Taking the total time run during the month as 26 days, it gives an average cost of 1s. 3d. per h.p. hour, and about 1 lb. charcoal per h.p. hour. The new plant is to be run by electric power, the generating plant being driven by steam. The question of installing gas engines for the enlarged plant was considered, but as the supply of charcoal was decreasing, and likely to become more costly, and the economy of coal burning gas plants had not yet been sufficiently proved, it was decided to instal steam boilers and quick running generators to supply the necessary energy for workshops, new mill, and pumping plant at the river, four miles distant.

MESSINA: CONSTRUCTING SLIMES DAMS.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Beginnings of the Rand.

To the Editor, *South African Mining Journal.*

Sir,—The *Journal* of November 8th contains an account of an interview with Mr. J. Arthur Greene in which the following appears:—" Many of the people of South Africa treat oil in the country as a joke," we suggested. " So I find—I'm rather glad of it," replied Mr. Greene; " it has made my work much easier, but I wish the people would forget also that the Rand was turned down by all the experts who came out from England, Australia and America for years—if they'd only forgotten that I'd have saved a lot of time and money too, etc." I am not in any way concerned with Mr. Greene's oil scheme, but I am concerned with the most sweeping assertion that the " Rand was turned down by all the experts . . . . for years." I was employed by the Exploration Company of London, of which Sir Horace Farquhar (now Lord Farquhar) was Chairman, to examine and report on the various mining districts in South Africa. I arrived at Capetown in the latter part of December, 1886, and, after visiting Barberton, came to the Rand in April, 1887. In May I entered into an engagement with Mr. J. B. Robinson, of the Robinson Syndicate, to develop their properties consisting of the De Villiers Block (since the Robinson G.M. Co.), Langlaagte Estate, Block B Langlaagte, and Randfontein. That I never " turned down " (*i.e.*, condemned) the Rand can be easily proved by my letters to Mr. De Crano, manager of the Exploration Co., my reports to the Robinson Syndicate, and my long connection with the mining industry of the Rand.—I am, etc.,

J. S. CURTIS.

South African Industrial Exhibition.

To the Editor, *South African Mining Journal.*

Sir,—A few weeks ago I sent you a prospectus and copy of the rules and regulations relating to the forthcoming Industrial Exhibition. The Committee desire to make this the biggest and best display of South African manufactured products ever collected under one roof, and we solicit the loyal support of every firm in the Union. A large amount of space has been applied for, but before the Committee can finally settle the size of the Industries Court, which has to be specially erected, it is necessary that we should know what space will be actually required. I have also to advise you that the Railway Department has agreed to convey exhibits back from the Exhibition to the station from which they were forwarded free of charge, and a rebate will be given of one-half of the charges paid for freight on the forward journey. The Union Castle Steamship Co., Ltd., will convey exhibits from coast ports to Capetown at the ordinary rate and return them free of charge.—Yours, etc.,

W. J. LAITE,
Secretary and Manager.

Capetown, 10th November, 1913.

THE OCTOBER OUTPUT IN DETAIL.

Labour Shortage the Feature.

THE following are the salient features of the October output:—

Total output	718,431 ozs.
Value	£3,051,701
Increase . .	12.248 ozs.
Value	£52,015
Rand output	687,515 ozs
Value	£2,920,379
Increase	11,104 ozs.
Value .	£47,168
Outside districts	30,916 ozs.
Value .	£131,322
Increase	1,141 ozs.
Value	£4.847
Total stamps	9,729
Decrease	145
Rand .	9,160
Decrease	170
Outside districts	569
Increase	25

Labour shortage has necessarily brought a curtailment of operations. Since March the labour complement on gold mines has been decreased by nearly fifty nine thousand boys, and over the last five months by forty-eight thousand seven hundred and sixty-two. The Witwatersrand output of 687,515 ozs., value £2,920,379, shows an increase compared with September of 11,104 ozs., value £47,168; the ratio of increase, making allowance for the difference of one working day in the month, is short of what might have been expected by some £48,000. The outside districts return of 30,916 ozs., value £131,322, an increase on the September yield of 1,141 ozs., value £4,847, is due to the longer month and extra stamps operating, and calls for no remark in particular.

DAILY YIELD AND PROFIT.

The yield and profit aspect for the past two years for the Rand is as follows:—

	Days.	Daily yield. £	Daily yield. £
1911—			
October	31	92,891	26.040
November	30	97.905	27.483
December	31	93,282	27,605
1912—			
January	31	97,188	26,182
February ..	29	98,863	28,032
March	31	100,011	35,167
April	30	100,071	29,932
May	31	102,350	30,961
June	30	102,312	34,583
July	31	100,841	32,876
August	31	100,328	33,178
September	30	101,449	33,841
October ..	31	101,134	34,072
November	30	103,035	34,677
December	31	102,200	35,734
1913—			
January	31	104,272	35,112
February	28	106,556	35,814
March	31	104,182	35,340
April	30	107.023	35,931
May	31	104,323	35.091
June	30	101.417	33,645
July	31	85,654	24,284
August	31	95,599	32,518
September	30	95,774	32,844
October	31	94,206	31,503

THE LABOUR POSITION.

The figures for the past three months of the numbers employed by members of the Native Recruiting Corporation, Ltd., at the last day of each month read:—

	August.	September.	October.
Gold mines	158.223	 152,637	.. .. 148.882
Coal mines	9.236	9,361	.. 9,377
Diamond mines	13,172	 12,321	 12,712
Totals	180,631	174,319	... 170,971

THE STAMP POSITION.

The fluctuation in the number of stamps employed in the Transvaal shows a decrease of 145, arrived at as follows:—Rand: Decreases: City and Suburban, 5; Jupiter, 120; Knight Central, 5; Randfontein Central, 25; Robinson Deep, 10; Van Ryn, 5; total, 170. Outside:—Increase: Miscellaneous, 25; decrease, 145.

THE TWELVE LEADING COMPANIES.

The mines comprising the twelve leading producers only show one change in composition, the Geldenhuis Deep dropping out to make room for the re-entry of the City Deep. The order of precedence varies after the first five, which retain the same places as for September. For October New Modderfontein steps above Modderfontein B., and Knights Deep, which was eighth in the previous month, takes the twelfth position. Rose Deep goes up from twelfth to eighth. Robinson Deep becomes ninth, Nourse Mines tenth, and City Deep now takes the eleventh place on the list. The principal details and results of operations of the twelve leading companies are as follows:

	Stamps.	Tubes.	Tons.	Value.
Crown Mines	660	24	175.000	£254,779
Randfontein Central	800	28	197,681	253,203
East Rand Proprietary Mines	820	25	138 100	227,763
Robinson	250	6	53,500	101,831
Ferreira Deep	245	6	52,910	101,546
New Modderfontein	180	7	40,000	83 366
Modderfontein B.	80	5	37 250	75 588
Rose Deep	300	7	59,700	72.951
Robinson Deep	115	8	52 500	72,530
Nourse Mines	260	7	49 800	72,347
City Deep	150	9	37,200	71,608
Knights Deep	400	11	101,800	70,619
	4,260	143	995,441	£1,458,131

GROUP PROFITS.

The following are the profits returned for August, September and October by the mines controlled by the different groups:—

	August.	September.	October.
Rand Mines:			
Subsidiaries	£244,735	£218,699	£228,246
Eckstein group	220,944	222,619	219,834
Barnato group	89,545	99,114	104,597
Robinson group	94,149	89,671	86,689
East Rand Proprietary Mines	82,513	83,460	83,504
Gold Fields group	95,037	88.843	77,942
General Mining group	66.284	63,199	64,159
Neumann group	60,767	65,242	59,873
New Kleinfontein	24,238	23,139	23,156
Consolidated Mines Selection ...	21,758	20,202	16,833
Goerz group	7,968	11,127	11,782
Totals	£1,008,048	£985,315	£976,615

INCREASES AND DECREASES.

The following returns of the October output have been filed with the Chamber of Mines. Increases and decreases compared with September are appended:—

The Witwatersrand.

	Sept. £	Oct. £	Increase. £	Decrease. £
Aurora West	19,328	19.663	323	—
Bantjes Consolidated	24,488	26.085	1,597	
Brakpan Mines	66.609	63,852		2,757
City Deep	68,788	71,608	2,820	—
City and Suburban	48,148	51,576	3.428	—
Consolidated Langlaagte	58.194	60,789	2,595	—
Consolidated Main Reef	34,181	33,990	—	191
Crown Mines	256,962	254,779	—	2,183
Durban Roodepoort	14.871	15,237	366	—
Durban Roodepoort Deep	32,053	32,300	247	
East Rand Proprietary Mines	222,764	227.763	4,999	—
Ferreira Deep	102.086	101,546	- -	540
Geduld Proprietary	29,433	31,641	2.208	
Geldenhuis Deep ...	70,088	69.017		1,071
Ginsberg	20,970	20.665		242
Glencairn Main Reef	14,803	15.467	664	
Knight Central	24,943	24.352		591
Knights Deep	74.238	70,619		3,619
Langlaagte Estate	51,992	58,377	6,385	—
Luipaardsvlei Estate	17,947	19.251	1,304	—
May Consolidated	11,834	11,945	111	
Main Reef West	25,571	24,989		582
Meyer and Charlton	34.683	35,745	1.062	-
Modderfontein B.	74,939	75,588	649	-
New Goch	25.286	28,643	2,817	—
New Heriot	23,418	23.630	212	-
New Kleinfontein	66,893	67,259	366	—
New Modderfontein	74.701	83,366	8,665	—
New Primrose	33,544	33,684	140	—
New Rietfontein	15,585	15,967	382	
New Unified ...	15.453	15,759	306	-
Nourse Mines	69,331	72.347	3,016	
Princess Estate	26,824	27,971	1,147	-
Randfontein Central	254,473	253,203		1,270
Robinson	104,762	101.831		2,931
Robinson Deep	69,586	72,530	2,944	-
Rose Deep	69,306	72.951	3,645	-
Roodepoort United	22,390	23,520	1,130	-
Spes Bona	4,842	4,685	-	157

	Sept. £	Oct. £	Increase £	Decrease £
Simmer Deep ..	45,786	49,885	4,099	·
Simmer and Jack	67,182	79,929	3,747	
Van Ryn Deep ...	51,087	56,988	5,901	
Van Ryn	51,274	53,615	2,341	
Village Deep	59,800	64,204	4,404	
Village Main Reef	64,676	66,180	1,504	
Vogelstruis Estate ...	14,255	14,519	264	
West Rand Central	4,044	4,133	89	
West Rand Consolidated	34,479	29,628		4,851
Witwatersrand ...	45,098	48,139	3,041	
Witwatersrand Deep	69,153	66,456		2,697
Wolhuter	43,425	41,203	-	2,222
Miscellaneous producers	17,981	40,310	22,329	

From fifty one Witwatersrand companies there is an increase of £47,168.

Outside Districts.

	Sept. £	Oct. £	Increase £	Decrease £
Barrett	1,396	1,393		5
Ceylon Lydenburg	845	1,109	264	—
Glynn's Lydenburg	8,266	8,345	77	—
Nigel	19,816	19,943	127	—
Quest	3,216	3,381	165	
Sheba ...	13,741	14,085	344	
Sub Nigel	8,653	8,126	—	527
Transvaal Gold Mining Estates	34,581	38,828	4,247	
Worcester Exploration	4,974	5,182	208	–
Miscellaneous producers	30,985	30,932		53

From nine outside mines there is an increase of £4,847.

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West ...	14,756	80	·	4,629	19,663
Bantjes Consolidated	23,900	100	3	6,141	26,085
Brakpan Mines	49,545	140	8	15,032	63,852
City Deep	37,200	150	9	16,858	71,608
City and Suburban	26,400	150	2	12,142	51,576
Consolidated Langlaagte ..	43,740	100	10	14,311	60,789
Consolidated Main Reef ...	27,230	100	3	8,002	33,990
Crown Mines	175,000	660	24	59,980	254,779
Durban Roodepoort ...	14,395	90	1	3,587	15,237
Durban Roodepoort Deep ...	22,320	100	3	7,604	32,300
East Rand Proprietary ...	138,100	820	25	53,620	227,763
Ferreira Deep	52,910	245	6	23,906	101,546
Geldenhuis Deep ...	48,800	300	7	16,248	69,017
Ginsberg	15,437	80	1	4,865	20,665
Glencairn Main Reef ...	18,727	160		3,641	15,467
Geduld Proprietary	21,100	60	5	7,449	31,641
Knights Deep	101,800	400	11	16,625	70,619
Knight Central	20,320	90	3	5,733	24,352
Langlaagte Estate ...	51,425	200	5	13,743	58,377
Luipaardsvlei Estate	18,250	60	3	4,532	19,251
Main Reef West	16,100	80	3	5,883	24,989
May Consolidated ..	14,050	100	—	2,812	11,945
Meyer and Charlton ...	14,990	75	2	8,415	35,745
Modderfontein B.	37,250	80	5	17,795	75,588
New Goch	28,330	120	4	6,743	28,643
New Heriot	13,100	70	1	5,563	23,630
New Kleinfontein	50,000	200	4	15,834	67,210
New Modderfontein	40,000	180	7	19,626	83,366
New Primrose	23,800	160	2	7,930	33,684
New Rietfontein Estate	15,700	120	·	3,759	15,967
New Unified	12,800	60	1	3,710	15,759
Nourse Mines	49,800	260	7	17,032	72,347
Princess Estate	22,500	60	5	6,585	27,971
Robinson	53,500	250	6	23,973	101,831
Robinson Deep	52,500	115	8	17,075	72,530
Randfontein Central	197,081	800	28	59,609	253,203
Roodepoort United	25,097	50	3	5,537	23,520
Rose Deep	59,700	300	7	17,174	72,951
Simmer Deep	58,850	180	9	11,744	49,865
Simmer and Jack	66,000	320	7	16,698	70,929
Spes Bona Tribute	5,127	40	—	1,103	4,685
Van Ryn Deep	34,400	70	8	13,416	56,988
Van Ryn Gold Mines	37,910	135	6	12,622	53,615
Village Deep	41,000	180	7	15,115	64,204
Village Main Reef	34,200	220	5	15,580	66,180
Vogelstruis Estate	13,264	80		3,418	14,519
West Rand Central	2,255	20	1	973	4,133
West Rand Consolidated ...	22,750	100	4	6,975	29,628
Witwatersrand	38,610	220	-	11,333	48,139
Witwatersrand Deep	47,190	245	4	15,645	66,456
Wolhuter	30,100	120	4	9,700	41,203
Miscellaneous producers	—	65	—	—	22,329

Outside Districts.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
HEIDELBERG -					
Nigel	13,300	75	1	4,695	19,943
Sub Nigel	5,040	25	1	1,913	8,126
BARBERTON -					
Barrett		—		328	1,393
Sheba	5,750	[illegible]		3,316	14,085
Worcester Exploration	5,400	40	2	1,220	5,182
LYDENBURG—					
Ceylon Lydenburg	652	5		261	1,109
Glynn's Lydenburg	3,788	20	1	1,964	8,343
Transvaal Gold Mining Estates	13,260	75	3	9,141	38,828
KLERKSDORP—					
Quest	3,694	35		796	3,381
Miscellaneous producers	-	234	·	—	30,932

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for last month of the undermentioned companies of the Consolidated Gold Fields group:

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	66,000	16,698	£32,532
Robinson Deep	115	8	52,500	16,682	28,000
Knights Deep	400	11	101,800	16,625	12,262
Simmer Deep	180	9	58,850	11,394	3,683
Sub-Nigel	25	1	5,040	2,013	1,465
Totals	1040	36	284,190	63,412	£77,942

* Icluding sundry revenue.

The sundry revenue included in the above total declared profits is as follows:—Simmer and Jack, £2,500; Robinson, £353; Knights Deep, £382; Simmer Deep, £692; Sub Nigel, £370; total, £4,297. At the Knights Deep, owing to the departure of a gang of Tropical natives, the scarcity of labour has been severely felt.

Goers Group.

Results of operations of the crushing mines comprising the Goerz group for the month of October, 1913: —

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated ..	100	—	14,050	£11,917	£3,040
Princess Estate	60	5	22,500	27,903	1,630
Geduld Proprietary ...	60	5	21,100	31,565	7,112
	220	10	57,650	£71,385	£11,782

Robinson Group.

The results of operations for October of the Robinson group of mines are as follows:—*Langlaagte Estate.*—Tons milled, 51,425; total yield, 13,743 fine ozs.; estimated profit, £13,231; estimated profit per ton milled, 5s. 1·75d. *Randfontein Central.*—Tons milled, 197,681; total yield, 59,609 fine ozs.; estimated profit, £73,458; estimated profit per ton milled, 7s. 5·518d. Total tons milled, 249,006; total yield, 73,342 fine ozs.; total estimated profit, £86,689.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of October, 1913:- Central Mines: Tons crushed, 11,000, yielding 7,678 fine ozs. Elandsdrift Mine: Tons crushed, 680, yielding 877 fine ozs. Vaalhoek Mine: Tons crushed, 1,580, yielding 586 fine ozs. Estimated value of month's output, £38,476; estimated profit for the month, £23,022. Labour supply increased during the month, but less than expected; is now improving.

THE WEEK IN THE SHAREMARKET.

Firmer, with Improving Tendency—Buying from London.

The market exhibited a better tendency towards the close of the week, on the receipt of some buying orders from London. Several of the Rand dividend payers improved, and people seem to be awaking to the fact that there are investment bargains to be picked up at present prices. With the labour supply on the mend, and the December dividend declarations drawing near, prospects are obviously brightening. In the diamond market the news of a probable combine between De Beers and the German Regie has produced an excellent effect; and the several syndicates now on the market have drawn a new lease of life from it. Speculation still centres in Pilandsbergs, and they have monopolized attention during the week, with many dealings at enhanced prices. Mr. Dale Lace is on the property, and the wires received from him during the week are most favourable. Buffelsdrift, the adjoining property, is also exciting interest, yellow ground is being opened up in several places, water is plentiful, and with the increased labour now available, development is being pushed on. The stones already found are of excellent quality. Frank Smiths are easier, though the prospects of the property have in no wise suffered, and much better returns are expected. Crowns have been harder during the week, and here again results may be expected to improve with the anticipated increase in the scale of washing. Other diamond syndicates, such as Greigs and Harrisdales are also coming in for attention, and indeed to-day it may be said that diamonds monopolize the attention of the market to the exclusion of gold and other stocks.

* * * *

	Fri., 7th.	Sat., 8th.	Mon., 10th.	Tues., 11th.	Wed., 12th.	Thurs. 13th.
Adair-Ushers	0 3*	0 3*	0 3*	0 3*	0 3*	—
African Farms	14 6	14 6*	14 9	14 6*	14 6	15 0
Apex Mines	17 0*	—	17 0*	—	18 0†	18 0†
Aurora West Uniteds	—	7 0*	—	-	—	—
Bantjes Consolidated	14 6†	13 6*	—	—	13 6*	—
Benoni Consolidateds	—	2 0*	—	2 0*	—	2 0*
Blaauwbosch Diamonds	—	—	—	—	80 0*	-
Brakpan Mines	—	50 0†	51 3†	50 0†	46 0*	42 6*
Breyten Collieries	26 0*	26 0*	—	—	—	—
British South Africa	18 6*	—	18 6*	—	18 6*	19 6*
Bushveld Tins	0 8†	0 8†	—	0 8†	0 8†	0 8†
Cinderella Cons.	-	—	5 6*	5 6*	5 6*	5 6*
City and Suburbans	48 0	48 0*	47 6*	47 6*	48 0	47 6*
City Deeps	54 0*	55 0*	54 6*	53 9*	54 0*	55 0*
Cloverfield Mines	4 1*	4 1*	4 1*	3 1*	3 9*	4 0
Cons. Gold Fields	40 0*	—	—	—	—	—
Cons. Langlaagtes	26 6*	27 6*	28 6*	—	29 0*	29 0*
Cons. Main Reefs	16 6*	16 6*	16 3*	16 0*	16 3*	16 0*
Cons. Mines Selection	—	8 6*	—	—	—	—
Coronation Collieries	11 6*	11 6*	11 6*	11 6*	—	11 6*
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5	0 5*
Crown Diamonds	7 0	7 3*	7 3*	7 3*	7 3*	7 3*
Crown Mines	—	—	—	122 6†	—	-
Doornhoek Tins	—			6 0	6 3*	- -
East Rand Centrals	8 3*	8 0*	8 3*	8 1	8 0	8 0
East Rand Coals	1 9*	1 9*	1 10*	1 9*	1 9*	1 10
East Rand Deeps	1 1*	1 3*	1 0*	1 0*	1 1*	1 1*
East Rand Props.	41 6*	41 9*	41 9	40 0*	40 0*	41 0
Eastern Gold Mines	1 0*	1 0	1 3†	1 3†	1 0	—
Frank Smith Diamonds	6 3	6 6	6 3	5 3*	5 9	6 1
Geduld Props.	21 0*	--	—	20 6*	20 6*	20 0*
General Minings	—		10 0*		—	—
Glencairn Main Reefs	—			—		2 9*
Glencoe (Natal) Colls.	7 0*	7 6†		7 0*	—	7 6†
Glynn's Lydenburgs	14 0*	15 0†	15 0†	15 0†	15 0†	15 0†
Government Areas	19 0*	19 6*	18 9*	18 6*	18 9	18 6
Jupiters	3 6*	3 6*	3 0*	3 6*	3 9*	3 6*
Kaalfontein Diamonds	0 3*	0 4*	0 3*	0 4*	0 4*	0 5
Klerksdorp Props.	2 0*	2 0*	—	1 11*	1 11*	1 11
Knight Centrals	9 3	9 0	8 9	8 6*	8 1	8 3
Lace Props.	2 8*	2 8*	2 8*	2 8*	2 9	—
Lydenburg Farms	2 9*	2 10*	2 9*	2 9*	2 10*	3 0†
Main Reef Wests		7 0*	7 6*	7 0*	7 0*	7 0*
Middlevlei Estates	0 9*	0 6*	1 0†	0 9*	0 9*	0 9*
Modderfontein B.	78 0	78 0*	78 0	78 0*	78 0*	78 6*
Modderfontein Deeps	32 3	32 6*	32 6	32 0*	31 9	31 6*
Natal Navigation Colls.	—	14 6*			—	15 0*
New Boksburgs	—	1 0†	—	—	-	- -
New Eland Diamonds	30 0†	30 0†	30 0†		30 0†	30 0†
New Era Cons.	5 0*	—	—	—	5 0*	5 3†
New Geduld Deeps	2 3†	2 0*	2 0*	—	1 10*	2 0
New Kleinfonteins	22 6†	25 0*	22 6*	22 6†	20 0*	22 6†
New Modderfonteins	223 0*	226 6*	220 0*	220 0*	220 0*	225 0*
New Unifieds	12 0*	—	12 0*	—	—	—
Orange Diamonds	1 7*	1 7*	1 7*	1 7*	1 8*	1 7*
Piggs Peaks	9 0*	9 0*	—	—	—	—
Premier Deferreds	—	—	—	—	—	203 9*
Pretoria Cements	44 6*	--	45 0*	—	45 6*	45 6*
Rand Klips	1 9*	1 10	1 9*	1 9*	1 10	1 10
Rand Nucleus	1 7*	1 6*	1 6*	1 6*	1 6	1 9†
Randfontein Deeps	-	-	—	—	3 0*	3 0*
Randfontein Estates	24 6*	—	24 0*	24 3	24 3*	24 6*
Roberts Victors	—	—		—	23 0*	26 6
Robinson Deeps	29 6*	-	30 0†	—	—	—
Rooiberg Minerals	28 0	28 0*	28 0*	27 6*	27 9*	27 0*
Rood. Durban Deeps	19 0*	19 0*	—	—	19 0*	—
Shebas	4 9*	4 9*	4 9*	—	5 3	5 0*
Simmer Deeps	1 0*	1 0*	1 0*	—	—	—
S.A. Breweries	40 0*	42 0†	42 0†	—	41 0*	41 0*
S.A. Diamonds	30 0*	30 0*	30 0*	30 0	30 0*	30 0*
S.A. Lands	3 0*	3 0*	3 0*	3 0	2 11*	—
Springs Mines	12 9†	12 9	12 6*	12 0†	—	11 0†
Steyn Estates	13 6†	13 6†	13 6†	13 6†	13 6†	13 6†
Sub Nigels	8 0*	8 6†	8 9†	8 0†	7 9	—
Swaziland Tins	44 0*	—	44 6*	—	—	—
Transvaal Coal Trust	31 9†	31 0*	31 0*	—	—	29 6*
Transvaal Cons. Lands	20 0*	20 0*	—	—	—	—
Transvaal G.M. Estates	47 6*	47 6*	47 0*	47 0*	—	47 6*
Van Ryn Deeps	35 0	34 9	34 6*	34 3	34 0	33 9
Vogel Cons. Deeps	1 0†	—	—	—	1 0†	—
Western Rand Estates	—	—	2 6†	2 6†	2 6†	2 6†
Witbank Collieries	41 0*	41 6†	41 6†	41 0*	41 0*	41 0*
Witwatersrands	70 0†	70 0†	—	67 6*	—	—
Witwatersrand Deeps	57 3*	57 0*	56 0*	56 0*	57 6†	56 0*
Wolhuters	12 6*	—	12 9	12 6	12 9*	12 9*
Zaaiplaats Tins	33 6*	—	33 6	32 0*	31 0*	32 0

*Buyers. †Sellers.

MINING MEN AND MATTERS.

The Kimberley School of Mines is having a busy session with Professor Yates' lectures, and educational matters in Kimberley are, we believe, to be further advanced by the establishment of a local training centre for teachers.

* * * *

The next monthly meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday evening, 17th November, 1913, at 8.15 p.m. The following papers will be open for discussion:—" The Bushman's River Cretaceous Rocks," by E. H. L. Schwarz, A.R.C.S.; " The Geology of Katanga and Northern Rhodesia—an Outline of the Geology of South Central Africa," by F. E. Studt, A.R.C.S.; " The Cassiterite Lodes of Leeuwpoort (938); the Paragenesis of the Lode-forming Minerals," by David P. MacDonald, M.A., B.Sc.; " Notes on the Tin Deposits of Embabane and Forbes Reef in Swaziland," by A. L. Hall, B.A.; " The Terraces of Eerste River at Stellenbosch," by S. J. Shand, D.Sc., Ph.D. The following paper will be read:—" Notes on a Form of Black Diamond from the Premier Mine," by David P. McDonald, M.A., B.Sc.

The net earnings of the Victoria Falls and Transvaal Power Co., Ltd., including those of the Rand Mines Power Supply Co., Ltd., for the quarter ended September 30 last amounted to £105,699. This includes the month of July, during which time the power company's operations were considerably curtailed owing to labour disturbances. The months of August and September show that the number of units sold were in excess of those for the first quarter of the current year, but are not quite up to the average of the second quarter, owing, probably, to the decrease in the native labour, and the consequent curtailment of mining development. This, however, is anticipated to be only of a temporary nature.

Rhodesian Section.

LATEST MINING NEWS.

Susanna Reef—Scottish Mashonaland—The Quarter at the Giant Mines—Globe and Phœnix Company's New Plant—Lomah Exploration—Globe and Phœnix Ore Reserves—London and Rhodesian Company—The Lonely—Rezende Mines.

At the Susanna Reef the auxiliary incline shaft has been sunk 8ft. to a depth of 70ft. At 65ft. north reef 9in. wide assays 12 dwts. 12th level north shoot has been advanced 3ft. to a distance of 11ft. from peg. At 9ft. reef 10ins. wide, assays 27 dwts. Winze 11 to 12 south shoot and spur has been advanced 5ft. to a depth of 52ft. At 50ft., reef 39ins. wide assays 7 dwts. Winze 10 to 11 south shoot has been sunk 3ft. to a depth of 101ft. and is now connected with 11th level. A sample over 29ins. at 100ft. assayed 6 dwts.

* * * *

The report of the Scottish Mashonaland Gold Mining Company, Limited, for the year ended June 30th last, states that on the Venus claims a limited amount of prospecting work has been carried out with fairly encouraging results. The company's investments, which stand in the books at a cost of £125,307, had a market value at June 30th last of £43,578. A small improvement has, however, since taken place. Owing to the reduction in the amount of dividends received from investments, the profit earned for the year amounts to only £9. The directors recommend the reduction of the nominal value of the shares from the existing £1 to that of 10s., thus reducing the present paid-up capital from £216,050 to £63,025.

* * * *

The report of the Giant Mines of Rhodesia for the year ended June 30th states that the amount standing to the credit of profit and loss account at June 30th, 1912, was £28,192, to which is added the net profit for the year, amounting to £75,646, making a total of £103,838. Of this amount, dividends Nos. 13, 14, 15, and 16, amounting to £77,125, were paid during the financial year. From the balance available the directors have transferred £10,000 to reserve account, making the amount set aside under this head up to £80,000, and have written off the cost of boring operations during the year, amounting to £8,227, leaving a balance of £8,485 to be carried forward. The working profit for the period amounted to £92,279, as compared to £128,337 in the previous year. The ore in sight at June 30, 1912, amounted to 243,687 tons, of an average value of 8.2 dwt. Of this quantity 131,887 tons, averaging 6.45 dwt., were crushed during the year under review. The engineers report that it is impossible to state with accuracy the ore reserve figures, but there is every evidence that a considerable length of time will elapse before the profit-earning stage is exhausted, even if no addition is made to the reserve by subsequent operations.

* * * *

In connection with the new shaft equipment of the Globe and Phœnix Company, the *Rhodesian Mining Review* understands the order has been placed for one 870 b.h.p. Belliss and Morcom patent self-lubricating type triple expansion engine, which is to be arranged for direct connecting to a 600 kw. revolving field 3-phase alternator. The boiler capacity is being increased by the addition of two Babcock and Wilcox 125 h.p. patent tubular boilers, each having approximately 1,265 sq. ft. of heating surface, these boilers being complete with dutch-oven furnaces and superheaters. A Belliss and Morcom patent high-speed steam-driven 20-drill air compressor is also being supplied. The engine part of these compressors is of the same design and possesses all the advantages of Messrs. Belliss and Morcom's self-lubricating engines. The compressor proper is fitted with "Rogler-Hoerbiger" valves which operate practically noiselessly and are most reliable in action. It is claimed that the overall efficiency of these compressors is extremely good. It will be noted from the above that a thoroughly first-class and up-to-date plant is being installed. The engine, boilers, etc., and compressor are being supplied by Messrs. Johnson and Fletcher, of Bulawayo.

* * * *

Kambanje mine: Extract from progress report for September—New main shaft: This is down 175 ft. Cross-cutting north and south started at 170 ft. level. Cross-cut south out 13½ ft. North 10½ ft. The south cross-cut will be kept going until the reef is intersected, when about 200 ft. of driving should be executed with all possible despatch, to prove the length of the strike.

* * * *

The estimates of reserves and values at the Globe and Phœnix mine at September 30, 1913, have been cabled to the London office of the Globe and Phœnix G.M. Co., Ltd., as follows:—Payable ore reserves, 178,685 tons; average value per ton, 29 dwts.; gold contents, 259,098 ozs.; gross value, £1,088,190. In addition to the above, there are on hand the accumulated sands, slimes, concentrates, and residues previously reported.

* * * *

Cable:—"Radnor—Total footage driven and sunk for month is 158 ft. Shaft No. 1—Shaft sunk 16 ft., total 300 ft. 300 ft. level—North cross-cut (towards lode at this level) driven 17 ft., total 17 ft.; exposing numerous stringers assaying from 2 dwts. to 6 dwts. (It is expected that the main lode will be struck at about 50 ft. north.) 200 ft. level—Main west drive driven 16 ft., total 41 ft., assaying 6¾ dwts. per ton over 53 ins. North drive not payable. East drive off winze driven 12 ft., total 12 ft., assaying 18½ dwts. per ton over 44 ins. West drive driven 10 ft., total 10 ft., assaying 7½ dwts. per ton over 47 ins. Cross-cutting south from 5 ft. to 9 ft., assaying 3 dwts. 4 grs."

* * * *

The following were the results of operations at the Lonely Mine, Southern Rhodesia, for the month of October, 1913:—Mill ran 25·95 days, crushed 5,840 tons; yield of fine gold, 1,597·745 ozs., value £6,716 7s. 2d.; slimes treated, 5,840 tons; yield of fine gold, 3,923·17 ozs., value £16,492 9s. 4d.; total recovery fine gold, 5,520·915 ozs.; total value, £23,208 16s. 6d.; estimated profit, £14,409.

* * * *

The results at the Rezende Mines for the month of October, 1913, were as follows:—Estimated profit: Central section, £1,527; old west workings, £712; Penhalonga section, £379; total estimated profit, £2,618.

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Engineering Notes and News.

Delagoa Coaling Plant.

The sub-contract for the erection of the McMyler coal-loading plant at Delagoa Bay under the active superintendence of Mr. J. G. Ransome, who represents the McMyler Co., has been given to the Bottomley Engineering Co., of Johannesburg.

Cape to Cairo Railway.

The latest report of the Katanga Railway Company gives interesting particulars as to the first part of the Belgian section of this great line. The final survey of the Djilongo-Bukama section should, by now, be completed. Djilongo is the terminus of the section now being built beyond Kambove, and the actual terminus of the working of the line. The Djilongo-Bukama section is about 240 kilometres long. The contract for its construction has just been awarded to the Société Coloniale de Construction, the Belgian company which is now building the Kambove-Djilongo section. The part of the Cape to Cairo line connecting the Rhodesian frontier with Elisabethville (255 kilometres) cost, with its branches (19 kilometres 700 metres), about 102,000 frs. per kilometre. The part connecting Elisabethville with Kambove (159½ kilometres), and the branch line (4 kilometres) connecting Kambove mine with Kambove station will probably cost from 116,000 frs. to 117,000 frs. per kilometre. (All the figures are not yet to hand.) In this is included the establishment and equipment of the track (gauge, 1 metre 067, rails weighing 29 kilogrammes per metre, metallic sleepers weighing 34 kilograms), and also the rolling material for the working of the line. The Kambove-Djilongo section 100½ kilometres) is expected to be working in the first half of next year. The Djilongo-Bukama section will be completed in 1915, and its working is expected to be inaugurated on January 1, 1916. The Cape to Cairo Railway will bring its passengers to a point 755 kilometres distant from the Rhodesian frontier. From that point the steamers and trains of the Great Lakes Company will bring them, by services already maintained, down to Stanleville. Therefrom a railway line, already surveyed by the Great Lakes Company, is to be built eastwards to Mahagi, the port on Lake Albert. The year 1911 brought to the Katanga Railway Company a net profit of 736,000 francs, while 1912 ended with a deficit of 459,500 francs. The first half of the current year ends, however, with a net profit of 41,677 frs. 74. The Katanga Railway Company now owns twenty-one locomotives, fifteen tenders, fifteen passenger carriages, 339 vans and freight cars, two tank carriages, and two travelling cranes. There are being built to the company's order, three locomotives, sixty-one freight cars, and four travelling cranes. Last year the Katanga Railway carried 18,247 passengers (4,345 more than in 1911), and 92,430 tons of freight (23,140 more than in 1911). Besides that traffic, 13,950 tons of freight were carried in service (13,420 less than in 1911).

Electrical Trade in Cape Colony.

Port Elizabeth's trade in electrical supplies is gradually assuming importance, and the American Consul there has recently urged American firms to give more attention to the market. The imports of electrical machinery into the Port Elizabeth district in 1912 amounted to about £60,000, of which 57 per cent. came from Germany, 32 per cent. from the United Kingdom, and about 12 per cent. from the United States. Imports of electric cable and wire amounted to about £27,000 in 1912, an increase of 20 per cent. over 1911, 80 per cent. coming from the United Kingdom, 17 per cent. from Germany, and the balance from the United States, Austria, Hungary, Italy, and Belgium, in the order named. Imports of electrical fittings amounted to about £55,000, an increase of about 37½ per cent. over 1911; Great Britain's share of these was about 58 per cent., Germany 30 per cent., and the United States 8 per cent. of the total. The duty on electrical machinery, wire, posts, and lamps is 3 per cent. *ad valorem*, and on electroliers and all fancy fittings 15 per cent. *ad valorem*. Imports from Great Britain are entitled to a preferential rate of 3 per cent. *ad valorem*, which entitles the first-named articles to enter free and the second to pay 12 per cent. American packing as a whole has greatly improved. It should, however, be remembered that all cargo for Port Elizabeth must be lightered in

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the open roadstead in Algoa Bay, where there is nearly always a considerable swell and frequently, during the "south-easters," a fairly heavy sea. In lowering cargo over the ship's side under these conditions it is absolutely necessary that all electrical goods requiring packing should be prepared for hard knocks. A recent consignment of American machinery was an object lesson on the value of proper packing. This shipment of heavy machinery, weighing about 4 tons, in two or three packages, was landed and unpacked without showing the slightest evidence of damage and without a screw, bolt, or plate missing. Manufactures of brass should be covered with soft paper, packed in paper shavings or similar material, and the packages so prepared as to be nearly or quite moisture proof, as the atmosphere along this coast is heavily laden with a salty moisture that badly tarnishes brass. The different municipalities and corporations operating electric plants in the district have only recently realised the necessity of reducing rates to a minimum. Before this was done the electric illumination of houses was not general. Now such lights are quite commonly seen, their use is increasing all the time, and there are promises of further reductions in rates. Nearly all buildings of any consequence are of brick with cement facing and roofed with galvanised iron, tile, or slate. Dwellings are principally of a single story, with an occasional house of two stories; commercial buildings are one to four stories in height. While these buildings are not fireproof, they are, from the nature of their construction, slow to ignite or burn. Speaking generally, it is the custom to conceal the wires in dwelling houses, offices, and stores and use surface wires in factories, warehouses, etc. In either case the wires are carried in conduits or steel tubes. The lamps used are principally of German make. The "Osram" probably has the largest sale of any locally. The General Electric lamp, made in England, and the Phillips, made in Holland, are both sold in the Port Elizabeth district. The screw socket is not much used, the bayonet or pull sockets being much preferred. This socket is of standard English size. Brass lampholders and switch-covers are used, but other fittings are largely of oxidised copper. Plain, solid, substantial fittings, easily cleaned and polished, are the best sellers. In obtaining a foothold in this market it must also be borne in mind that the workman employed to instal lights and fixtures has, as a rule, obtained locally such knowledge as he has, and his experience has been limited. Explanations, instructions and descriptions, should be as complete as possible in the plainest language. The two principal lighting and power plants at Port Elizabeth and East London are owned and operated by the respective municipalities. Originally the rates charged for light were high, varying between 16 and 25 cents per k.w., and very little less for power. More recently prices have been gradually reduced until the use of electricity for power, cooking and heating is not uncommon. Fuel is expensive in most parts of the district, and not usually of the best quality. Consequently, as electrical current becomes cheaper, its employment for general household and manufacturing purposes will increase.

Finance, Commerce, and Industries.

Cattle Ranching in Swaziland.

Mr. A. M. Miller, of Swaziland, and Messrs. T. Fleming and J. Hunt Holley, the well-known stock-breeder and wattle-grower respectively of the Maritzburg district of Natal, are the directors of the Swaziland Ranching and Development Company. The company has 160,000 acres in the territory, and is going in extensively for cattle-ranching. It owns at present a thousand head of stock, mostly Free State but partly native cattle, along with thirteen imported bulls, and it hopes within two years to have the numbers raised to 4,000 head by further purchases from the Free State and by natural increase. It is by practical enterprises of this nature, says the *Lourenco Marques Guardian*, and that recently begun by Sir Thomas K. Murray, that Swaziland, and the Lebombos on the Portuguese as well as the Swaziland side of the range, are bound to become noted in the near future as ideal ranching grounds.

* * * *

Rebate on British Goods.

Messrs. Parry, Leon & Co. are circulating a copy of the Customs Minute No. 72/380 of October, 1913, issued by the Department of Customs and Excise, Pretoria. This notice states that unless invoices are accompanied by the certificate of origin where such invoices refer to goods of British manufacture, the full duty will be levied by the Department and no preferent rebate allowed. Further, the Department are not prepared to consider any application for refunds of duty overpaid owing to the certificate referred to arriving after the original entries have been passed. It is therefore suggested that all firms interested in this should communicate with their shippers immediately in order that the three per cent. rebate on British goods may be obtained on future shipments.

* * * *

Chartered Land Scheme.

The long-awaited Chartered Company's land scheme is published, and the following is a summary: (1) It is proposed to constitute by Ordinance a Board (upon which the European community of Southern Rhodesia would be adequately represented) for the purpose of accelerating closer settlement upon defined lines in that part of the territory which lies within 25 miles of the railways. (2) That that Board should be given the power of acquiring undeveloped land within this zone for re-sale to settlers. Failing agreement, it would have power of compulsory purchase at fair market prices, which, if necessary, would be settled by arbitration. (3) That undeveloped land should be subject to taxation, the proceeds of which would be specifically earmarked for the purposes of the Land Settlement Board. (4) That the British South Africa Company should make advances to the Land Settlement Board up to £250,000 on approved estimates. These advances would carry interest. (5) That the company should assist the Land Settlement Board to obtain additional financial facilities by the use of the company's credit; and (6) That these financial arrangements should remain in force for so long as the company continues to administer the territory. It is pointed out that the land in Southern Rhodesia available for European settlement is limited by natives reserves, private occupation, and by physical conditions such as altitude, fertility, water supply, and accessibility to markets. Tables showing the

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The Transvaal Farmers' Year Book.

FOR the convenience of hundreds of persons interested in Agriculture who find it necessary to repeatedly apply to the Union Agricultural Department for advice on the various activities with which they are concerned, it has been decided to publish a work entitled "The Transvaal Farmers' Year Book," which will deal exhaustively with all subjects likely to be of assistance to the farmer operating more especially in the Transvaal Province.

The size of the book will be about 450 pages, 9¾ inches x 7¼ inches, bound in full cloth covers.

Chapters will be devoted to—

How to select a Farm. How to lay out a Farm. Farm Management.

Live Stock. Breeding, Management and Judging.

Merino Sheep. Breeding, Management and Wool Classing.

Photos of Prize Cattle, Horses, Sheep, Pigs, etc.

Farm Crops. Tillage and Seeding, Harvesting and Judging Farm Produce. Feeds and Feeding.

Tobacco. Growing, Curing and Marketing.

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With the work will be issued a Farm Map of the Transvaal, size 50 x 40 inches, showing all farms named and numbered, Rivers, Railways, Roads, Posts of Stock Inspectors, Government Veterinary Bacteriological Laboratories. Posts of Government Veterinary Surgeons, Ports of Entry for Stock, Government Experimental Farms, Pedigree Stock Farms, Government Experimental Orchards, Government Tobacco Farms, Nurseries and Forests Stations, Government Sheep Farms, Government Stud Farms, Government Tobacco Stations, Government Poultry Stations and Government Botanical Experimental Farms.

The first edition of the work will be supplied immediately on publication to farmers and others ordering their copies in advance, and to ensure early delivery, orders should be sent to the Publishers without delay, accompanied by remittance.

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ownership of the land within the various areas to which this statement relates are given, the general purpose of which is summarised as follows: The area of the territory is approximately 95,000,000 acres, but of this about 25,000,000 acres are absorbed by native reserves, leaving about 70,000,000 acres to be considered. Less than 48,000,000 acres are owned by the British South Africa Company, and nearly 22,500,000 acres are held by companies and private owners. It is assumed in the present circumstances that only land situated at 3,500 feet above the sea level is fully adapted for European occupation. Those portions of Southern Rhodesia which meet this requirement are estimated at about 59,000,000 acres. Of this area 16,296,000 acres are absorbed by native reserves, and about 19,000,000 acres are held by companies and individuals, leaving about 23,000,000 acres in the hands of the company for the purposes of the scheme. A zone consisting practically of 8½ million acres of land owned by the company within 25 miles of a railway is mapped off, but it is intended to secure the co-operation of other owners of land within the zone. It is proposed tentatively that the Board should consist of eight members, namely, a chairman (nominated by the company), a Treasury official, and the Director of Agriculture, representing the Administration, the company's commercial representative, a representative of large land-owning companies, a representative of the Agricultural Union, and two elected members of the Legislative Council. The appointment of a Commissioner of Land Settlement in England is also suggested.

* * * *

The Shipping Freights Agitation.

In a letter to the papers, Mr. Harold R. Mosenthal, of Mosenthal Bros., replies to Mr. Jagger regarding the Shipping Agreement. He holds that the South African public has not much to complain about, as from the statement of comparative rates drawn up by the Chairman of the South African Merchants' Committee in London the country is at no disadvantages; in fact, the contrary as compared with other Colonies and oversea countries. The letter continues: "In invoking the assistance of the Government to support his attitude, Mr. Jagger would perhaps be well advised at the same time to ask the Government to bear in mind the old adage of 'The mote and the beam,' and to consider the advisability of putting its own house in order; in other words, they should consider whether railway rates to inland towns do not require as much and more investigation than sea freights. In regard to the small shipper he has everything to gain by the so-called monopoly, and would be the first to suffer should an open market be created, when his big rival, with the heavy freight which he can offer, could contract at a price which would effectively squeeze out the small man. Under the existing agreement he gets equality of rates, irrespective of the amount of freight which he can offer, and this is an advantage which he would be very foolish to rashly throw away." As to the position of big shippers, Mr. Mosenthal points out that they obtain stability of rates which are not at present exorbitant. He considers it time enough to pursue an agitation when the rates can be proved to be unfairly high. He continues: "With all due respect to Mr. Jagger, it is not accurate to say that anybody has been compelled to sign by threat that their cargo will be shut out, the true position being that those who signed the agreement have first call on the space available, and it is only when the boat is actually full that any cargo at all would be shut out. Then, naturally, it would be that of non-signatories, but to say that cargo would be deliberately shut out when there is room for it, would hardly make the shipping companies appear very keen in business methods. The agitation is really a one-man show, as there is no doubt that the few recalcitrant Capetown merchants would readily sign the agreement if Mr. Jagger did. On the face of it this attitude of Mr. Jagger's appears to be public-spirited, but in effect, if his agitation were successful, it would be essentially selfish, seeing that he with the large cargoes he has to offer would be one of the very first to benefit by the open freight market." In conclusion, Mr. Mosenthal thinks the mercantile community would be very well advised to let well alone, a conclusion in which we heartily concur.

Opening up Angola.

The Governor-General of Angola is carefully considering a scheme to open up that Colony by means of rail, road, and water communication. The scheme, which was originally drawn up by a predecessor, but had been shelved, provides for seven main lines of penetration, the routes being as follows:—(1) O Zaire to Noqui, on the Congo, thence to the Cuango via Marguela do Zumbo, approximate distance 300 miles. (2) The Malange railway, route from Malange to Cassai, via Quella and Camoillo, 400 miles. (3) The Benguella railway, route from Cubal to Cuando, via Gauda and Fort Amelia, 500 miles. (4) From Cassanga, on the Malange line, to Cassai, via Mona Quibundo, 400 miles. (5) From Hecambo, on the Benguella line, to Mona Candundo, via Bihé and Mochico, 500 miles. (6) The Mossamedes railway, route from Lubango to Cubango, via Capelongo and Fort Luzo, 400 miles. (7) From Lubango, on the Mossamedes line, to Fort Duque de Bhagança, via Gambos and Humbe, 400 miles. Once the plan is agreed on and these lines of penetration are open, says the *Diaria de Noticas*, the opening of transverse routes will be proceeded with. These will be directed to important agricultural centres or possible settlements of colonisation, allowing the indigenous products to drain into the lines of principal penetration and European products to find their way inland. These secondary lines will be so much the easier to establish since it is certain that the numerous rivers in the Colony can be utilised. At present many of the launches that were sent in 1907 for the navigation of these rivers are lying abandoned or in dock owing to the paucity of land communications by which they could be fed.

October Company Registrations.

The following new companies, foreign companies, increases of company share capital and notices of liquidation of companies have been registered at the Registrar of Companies' Office, Pretoria, during October:—

NEW COMPANIES.

Kenilworth Hall, Ltd., 200 and 201 Fraser Street, Kenilworth Township, Johannesburg; capital £1,000.
Mark Wilson, Ltd., South African Mutual Buildings, Johannesburg, capital £15,000.
Machavie Deep Company, Ltd., Exploration Buildings, Commissioner Street, Johannesburg; capital £12,500.
Haenertsburg Gold and Copper, Ltd., Trust Buildings, Fox Street, Johannesburg; capital £20,000.
C. H. Zeederberg, Ltd., Erf 2, Mare Street, Pietersburg, capital £70,000.
American Novelty Company, Ltd., 19a Simmonds Street, Johannesburg; capital £3,000.
The Premier Milling Company, Ltd., National Bank Buildings, Simmonds Street, Johannesburg; capital £60,000.
De Mooirivier Dorschmachine Maatschappij, Beperkt, Erf No. 111, King Edward Street, Potchefstroom; capital £2,000.
Local Automobiles, Ltd., 26 Bureau Lane, Pretoria; capital £600.
The Pretoria (Transvaal) Farmers' Agency, Ltd., 171 Van der Walt Street, Pretoria; capital £1,000.

FOREIGN COMPANIES.

Arigos Syndicate, Ltd., care of Alexander Algernon Osborn, 15 New Court, Johannesburg; capital £3,700.
Rex Zaaiplaats Tin Mines, Ltd., care of Harry Hargreaves, 85 Cullinan Buildings, Johannesburg; capital £30,000.
Hermann & Canard, Ltd., care of Jacob Herman Tuchten, 47 President Street, Johannesburg; capital £200,000.

INCREASES OF CAPITAL.

Ermelo Townlands Collieries, Ltd., Johannesburg; capital increased from £30,000 to £52,500.
Fairview (T.C.L.), Ltd., Johannesburg; capital increased from £45,000 to £47,000.

NOTICES OF LIQUIDATION.

F. Robertshaw, Ltd., Olifantsfontein; voluntary.
Outspan Syndicate, Ltd., Johannesburg; voluntary.
S.A. Amalgamated Jewish Press, Ltd., Johannesburg; voluntary.
The Premier Milling Company, Ltd., Johannesburg; voluntary.
The Rooderand Gold Mining Company, Ltd., Johannesburg; voluntary
Simmer East Deep, Ltd., Johannesburg; voluntary.
South French Rand, Ltd., Johannesburg; voluntary.
French Rand Deep, Ltd., Johannesburg; voluntary.
Devil's Creek, Ltd., Johannesburg; voluntary
Ventersdorp Farming and Speculating Company, Ltd., Johannesburg; voluntary.
Solomon's Temple Tin Mines, Ltd., Johannesburg; by order of Court.
West Rand Co-operative Society and Stores, Ltd., Krugersdorp, by order of Court.

UNION MINERAL OUTPUT FOR SEPTEMBER.

Decrease of £114,125—Gold, Coal, and Base Metal Figures.

THE statistics of the Union mineral output for September, supplied by the Mines Deaprtment, show that the total value was £3,245,634, compared with £3,359,759 for August—a decrease of £114,125. The August output compared with July showed an increase of £326,197. The gold return in August was £3,116,233; for September it had fallen to £2,993,059. The total value of minerals for the last nine months was £31,080,961. The total value of gold was £28,603,305. Details of last month's output are, in value: Gold, £2,993,059; silver, £9,090; coal, £185,659; base minerals other than coal, £57,826; total value, £3,245,634. The returns for the last nine months in quantity and value were:—

	Ounces.	*Value.*
Gold	6,733,786	£28,603,305
Silver	729,732	88,313
Coal (tons)	6,611,478	1,665,758
Base metals		723,585
Total value		£31,080,961

GOLD.

The following table shows the number of mines working in the various districts declaring gold, and the district outputs for September. Decimals are omitted:—

	Tubes	No. of mines.	Stamps.	Output. fine ozs.
Witwatersrand	282	55	9,325	675,421
Heidelberg	2	3	105	6,729
Klerksdorp	2	3	69	2,821
Ottoshoop	—	—	-	37
Pretoria	—	—	-	5
Barberton	3	10	182	7,074
Pilgrims Rest	5	15	154	12,284
Pietersburg	—	2	25	183
Totals for Transvaal	294	88	9,860	704,557
Totals for Natal	—	1	5	67
Totals for Union	294	89	9,865	704,625

COAL.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s. d.
Springs Brakpan	4	50,727	36,021	5 2·29
Middelburg	16	386,455	331,029	4 5·25
Other areas	9	65,550	62,092	3 9·97
Totals for Transvaal	29	502,732	429,142	4 4·96
Totals for Cape	9	7,518	6,135	11 2·89
Totals for O.F.S.	5	61,815	51,657	5 4·53
Totals for Natal	20	326,897	246,147	5 11·78
Totals for Union	63	898,962	733,081	—

COPPER AND TIN.

The output of copper and tin mines for September was:

COPPER

	Tons.	Value.
Transvaal	523¾	£16,427
Cape	1,231	-
Totals for Union	1,744¾	£16,427

TIN.

	Tons.	Shipments.
Transvaal	294¼	£31,555
Cape	11½	—
Totals for Union	305¾	£31,555

OTHER MINERALS.

The sales and shipments of minerals, other than gold, coal, copper and tin, were:—

	Tons.	Value.
Asbestos	89 081	£1,386
Graphite	2·688	85
Magnesite	33·000	74
Lime	5,065·000	8,120
Flint	25·000	179
Silver in gold bullion (ozs.)	75,718·060	9,090

LABOUR RETURNS.

The following statement shows the number of persons in the service of the companies and companies' contractors at the end of September:—

	Whites.	Coloured.
Rand area	22,059	159,172
Heidelberg	232	2,400
Klerksdorp	122	1,305
Ottoshoop	153	1,271
Barberton	283	2,605
Pilgrims Rest	363	5,020
Pietersburg	335	3,798
Total	23,547	175,571

ACCIDENTS.

The total number of separate accidents in the Transvaal for September was 211, and in the Union 267. The accident figures for 1912 and the last 12 months are:

	Separate	Killed.		Injured.	
	Accidents.	Whites.	Coloured.	Whites.	Coloured.
1912	3,124	69	962	356	2,300
October	257	8	78	28	193
November	245	7	74	31	169
December	247	6	86	22	173
1913—					
January	282	6	106	34	208
February	276	8	93	24	201
March	336	6	92	31	252
April	310	10	85	30	251
May	270	9	71	32	216
June	282	8	87	37	189
July	248	11	87	22	183
August	267	5	64	32	199
September	267	4	42	34	216

The number of cases of explosives manufactured during September was: Transvaal, 23,608; Cape, 32,404; Natal, 19,062.

Roberts Victor Diamonds.

The following was the result of operations at the Roberts Victor Diamond Mine during the month of October, 1913:—17,364 loads washed, yielding 5,355¼ carats; average, 30·8 carats per 100 loads.

Romola Nigel.

The secretary writes: "The battery ran 13½ days, crushed 283 tons, produced gold from the plates to the value of £866 11s. 8d.; the estimated profit is £580. Tailings are stored for cyanide treatment later."

Frieda Gold Mine.

A year ago the main reef on the Frieda was struck, good progress has been made, and the mine is now at the producing stage, says the Zoutpansberg paper. The average width of the reef is 4 ft. 6 ins. and at the place where operations are now being conducted it is 6 ft. wide. The screening sample is 22 dwts. in the trial crushing and it may be added that 1,000 tons were put through trials. A vertical shaft has been sunk to a depth of 50 ft. and then inclines to a depth of 112 ft. At present driving operations are in progress along the reef both in an easterly and westerly direction. It was found that this was more or less a cyanide proposition and a five-stamp mill was erected while a Wilfley concentrator was installed, the cyanide and slimes being treated by the cyanide process. It may be added that a good deal of pegging has been carried out to the west of the Frieda property.

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Automobile Notes.

The *Motorists' Paradise* is the title of a handsome booklet which has been issued by the Cape Peninsula Publicity Association. It indicates briefly the many advantages which the district within a radius of 150 miles of Capetown affords the motorist, and it sketches a few of the better known motor drives. The booklet is profusely illustrated, and contains a couple of maps, and also information with regard to the rates for the conveyance of cars by rail and steamer from other parts of South Africa. Up-country motorists can obtain a copy of the brochure on application to the Publicity Association.

* * * *

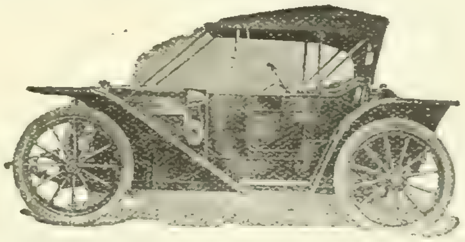
The uselessness of speed limits for the prevention of accidents has so often been urged by the motoring Press of the world, and the arguments so repeatedly and convincingly put forward, that a change in the attitude of the daily Press in England was in time to be expected. The following from a leader in the *Daily Mail* is so admirable a summary of the arguments which have appeared from time to time, and again and again in the motoring columns of the Press of South Africa, that we quote it in full: " At present the law provides that no car shall be driven at a speed exceeding twenty miles an hour, and that in certain areas, on the application of the local authority, the speed shall be limited to ten miles an hour. Experience has shown that the mere pace at which a car is travelling is no criterion of its danger or otherwise to the public. There are stretches of open country where a speed of double the legal maximum involves no risk whatever to anyone except the occupants of the car; and there are other and more crowded areas where ten miles an hour is an excessive and unwarrantable speed that the law ought not to sanction. The fact is, that the only rational basis for regulating the speed of motor-cars is the degree of danger to the public, that this degree varies according to circumstances, and that no arbitrary enforcement of a maximum and minimum rate of travel will ever hit it off. A car driven to the public danger is a car driven to the public danger whatever the speed at which it is proceeding. That is the principle which, in practice, if not in theory, governs the French solution of this problem. The consequence is that there are no absurd police traps in France, and that life on the highways of the villages and towns is really better protected against motor accidents than in England. It is time for us to adopt the same simple and effective procedure over here."

* * * *

Speaking at the annual meeting of the Royal Automobile Club of South Africa, Mr. A. T. Hennessy, who presided, pointed out that by the end of the year every motorist must hold a licence, but in order to obtain that he must first pass an examination, which was purely a test in driving, no technical motoring knowledge being required. The examiners must satisfy themselves that the applicants knew the rules of the road and could control a car or motor-cycle. On taking the certificates to the Controller of Revenue the holder could obtain a licence for driving a car on payment of £1, and for driving a motor-cycle on payment of 10s. These certificates did not require renewal.

After January 1 next all motor vehicles would have to be numbered. Regulations would shortly be issued providing that every motorist applying for a licence for his car must state its weight, and all the sellers of cars must supply their purchasers with the correct weight of the car, unladen. The conditions with regard to numbering were precisely similar to those in force in Great Britain. A great many cars plying for hire carried numbers which would not comply with the requirements of the law either with regard to the size or colour of the figures.

In the past the club had been strongly opposed to the numbering of motor cars, because it did not think it was necessary, for in those days when motors were not so numerous as they were to-day there was no difficulty in tracing a car. But that day had passed, and there was no doubt that now numbers were necessary for purposes of identification.



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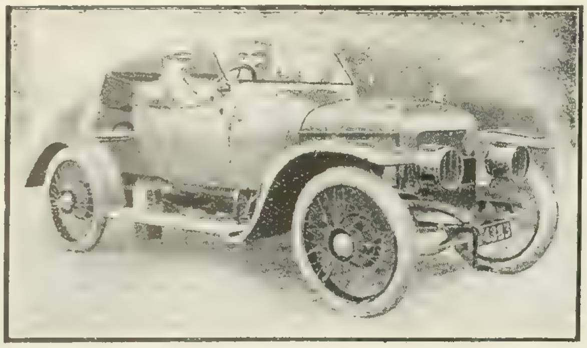

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He was sorry to say that he saw a great deal of inconsiderate driving in the Cape Peninsula, and would frequently report the offending drivers, but for lack of means of establishing their identity. Members of the club should report all cases of reckless driving which they saw. As the number of cars increased he was afraid that there was a tendency for reckless driving also to increase. There was no doubt that there was a great deal of reckless driving. Major Gray, the Chief of the Police, was giving the matter his careful consideration, and if motorists did not mend their ways he (Mr. Hennessy) expected that the police would have to consider the question of taking steps to institute prosecutions for reckless driving in certain areas. One of those areas was at Kalk Bay; the speed at which some cars went round the bend there was absolutely criminal. Unless things were remedied, severe measures would be taken.

* * * *

The Committee of the Royal Auto Club of South Africa, in the course of its annual report, stated: It is with great pleasure that your Committee has to report that the question of motor legislation, which has so long and so constantly occupied the club's attention, has now been dealt with, in the shape of a Motor Ordinance, which was passed by the Provincial Council last July, and which comes into operation on the 1st of January next. Your Committee does not propose to go into the details of the Ordinance, which are probably well known to most of the members; but it wishes to place on record its appreciation of the reasonable attitude adopted by the Administrator and the Council in adopting the recommendations and suggestions made by the club, and in generally meeting the representations of the club. The Ordinance is a fair and reasonable measure, though it is open to the one criticism that it diffentiates against the motor car in favour of the horse vehicle, the latter escaping untaxed. Under this Ordinance the Administrator has appointed your vice-chairman as chairman of the Board of Examiners, and the secretary one of its members. Your Committee regrets that it was not possible, owing to the difficulty of embracing anything else but motor matters in this Ordinance, to give the Administrator authority to frame regulations dealing with all classes of traffic. The question of local traffic regulations has also engaged the attention of your Committee. At the request of the Municipality, a set of model regulations was submitted to the Council, all of which have been adopted and embodied in the draft regulations which will be shortly promulgated. In the interests of the community, it is of equal, or greater, importance that general traffic regulations should be issued. The Administrator has, however, promised at an early date to introduce legislation giving him the necessary powers to deal with this matter.

Mr. Hennessy subsequently referred to the growth of motoring in South Africa, stating that the value of motor cars imported into the Union during the first nine months of this year was £785,000, as against £350,000 for the whole of last year. These figures were absolutely astounding. The value of the imports of motor cycles had practically doubled. As to petrol, 3,168,000 gallons had been imported during the first nine months of this year, as against two million gallons for the whole of last year. If this sort of thing went on, it would be difficult to find a European adult in South Africa who did not own a motor of some description. Investigations were being carried on with the object of discovering a substitute for petrol, but the only substitute which had reached a practical stage was benzol. We had a great deal of coal in this country, and although it might not be feasible to establish a benzol factory here, the time might come when it would be worth the while of a colliery company or a wealthy corporation going into the question. He had arranged with a Natal colliery company to send Home sufficient samples of two sorts of coal it produced so that they could be tested. The Union-Castle Company had kindly offered to convey the coal free of charge, and he (Mr. Hennessy) was arranging to have the coal put through a thorough test to find out what its possibilities were from a benzol producing point of view. Personally, he thought that benzol would be only a temporary substitute, and that some day something in the nature of alcohol would be the final solution of the fuel question. In the meantime it would be just as well to know what our resources were in this country should there be a shortage of petrol.

QUARTERLY REPORT.

East Rand Proprietary Mines.

The report for the quarter ended the 30th September on operations at the East Rand Proprietary Mines states that from 395,600 tons of ore milled and treated, 144,196·713 ozs. of gold were recovered. The estimated value of the revenue from gold is £608,647, or 30s. 9d. per ton. Working expenditure absorbed £407,167, or 20s. 7d. per ton, which left a working profit of £204,480, or 10s. 2d. per ton. A further profit of £11,620 was derived from treatment of 18,877 tons of accumulations, making the total £213,099. Against this sum is set approximately £64,473 for Government tax, interest on debentures, miners' phthisis fund, strike expenditure, etc. Payments under authorised votes for the period were £23,467. The approximate cash position at the 30th September, after providing for all liabilities, but exclusive of the debenture issue of £1,400,000, was £333,019; less cash assets (stores and materials, sundry debtors, payments in advance, etc.), £123,977; balance, approximate cash position, £209,042. On development, the number of feet driven, risen and sunk (excluding shafts), was 11,808 feet; the footage sampled was 9,326 feet; the average reef channel width being 25 inches; the average assay value over reef channel width, 9·9 dwts. The number of cubic feet excavated (stations, ore bins, etc.), in addition to above footage, 65,348 cubic feet. Ore mined, including ore mined from development faces, 435,221 tons; ore taken from surface dumps, 3,052 tons; total, 438,273 tons. The actual expenditure on development amounted to £32,970, as against £59,340 provided in the working costs (at 3s. per ton milled), leaving a balance of £26,370, which, added to the balance at 30th of June, of £181,787, gives a total of £208,248 standing to the credit of development suspense account at 30th September. This amount has been treated as a liability and is allowed for accordingly in the cash position shown above. The decrease in the tonnage milled as compared with the previous quarter is due to the acute shortage of native labour, consequent on the recent industrial disturbances. The underground pumping installation and the dams for controlling the water underground will be completed during October, and it is hoped to commence driving through the water dyke during the month of November.

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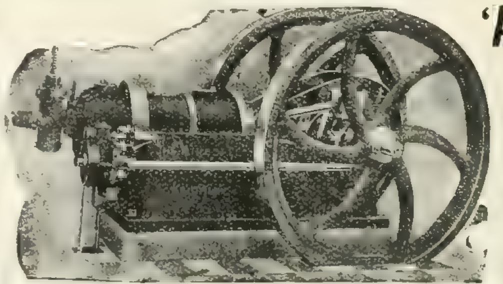

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The Week's Company Meetings.

JUMPERS G. M. COMPANY.

Annual General Meeting.

Chairman's Remarks.

Company's Prospects.

The annual general meeting of shareholders of the Jumpers Gold Mining Company, Ltd., was held at the board-room, Exploration Buildings, Nov. 11, Mr. H. O.'K. Webber presiding. The following shareholders attended: Messrs. E. Renaud, P. L. Flanagan, S. C. Black, F. Elkan, B. Moses, W. T. Graham, Comte F. de Ferrieres, H. P. Rogers, S. E. Allen, H. Daniel and J. H. Catthrall, representing a share capital of £22,493 out of a total of £100,000.

Chairman's Speech.

After the usual formal business had been disposed of,

The Chairman, in moving the adoption of the report and accounts, said: You have before you the directors' report and the accounts for the period ended the 15th of August, 1913. The accounts submitted include the result of the clean-up operations which were rendered necessary by the determination of the agreement with the Treasury Gold Mines, Ltd., to which I shall refer presently. The financial position was, briefly, as follows: The net amount of cash and cash assets carried forward on the 31st of July, 1912, was £8,447 4s. 8d. This sum was supplemented during the period under review by £14,833 15s. 8d., this company's net share of profit from joint operations; £1,849 8s. 4d., proceeds of the sale of equipment and ground: £891 6s. 1d., appropriated on account of a reserve for Profits Tax, which, on settlement with the Revenue Authorities, was found to be not due; and £217 19s. 8d., dividends on shareholdings and rebate on gold freight: a total of £26,239 14s. 5d. Out of this amount, £3,900 9s. 10d. was set aside in terms of your agreement with the Treasury Gold Mines, Ltd.; £1,410 4s. 11d. represents this company's share of the contribution to the Compensation Fund created under the Miners' Phthisis Act of 1912; £10,000 was paid to shareholders in the form of two dividends of 5 per cent. each; and £10,928 19s. 8d. was carried to the balance-sheet. I should like to mention here that this £10,928 19s. 8d. is, to the exent of £3,437 13s. 7d., represented by the book value of the mine stores in stock on the 15th of August, and that a loss on the realisation of these stores must be expected, owing mainly to the antiquated pattern of some of the machine spares, etc., that are included in the stores.

Dividends.

Two dividends, of 5 per cent. each, amounting to £10,000, were declared and duly paid to shareholders during the period under review. Turning to the balance-sheet, the only item which calls for comment is the reserve fund, which stands at £12,479 16s. 2d. Shareholders will remember that this reserve fund was created in terms of the agreement entered into in 1910 with the Treasury Gold Mines, Ltd., with a view to securing for that company, to the extent of the amount of the reserve fund thus created, a maximum ultimate share of profit of £53,500. As the amount received by the Treasury Gold Mines, Ltd., has fallen short of this £53,000 by some £23,000, the whole of the £12,479 16s. 2d. has, since the closing of the books, been handed over to that company in terms of the agreement; shareholders must therefore not look on this reserve fund or part thereof as an amount available for distribution.

Your manager's report deals with the result of mining operations at your mine and that of the Treasury during the period under review: I shall therefore confine myself to saying that the question as to whether underground mining operations should have been restarted when the strike came to an end, was very carefully considered, and your directors came to the conclusion that the profit which the company might have derived out of the 2,400 tons (approximately) of payable ore left in the property would not have covered the cost of restarting operations, which would have included the reopening of certain stopes which, but for constant attention, would have caved in months ago.

Underground Operations.

Underground mining operations were therefore brought to a final end, the mine authorities duly advised, and the formalities prescribed by the mining laws of the Transvaal duly fulfilled. You will, I feel certain, agree with me that your company's mining record is one on which any mine on these fields could feel proud; for a company with a mining property of 36 claims to have been able to keep a hundred-stamp battery fed with payable rock for a period of close on 23 years is an eloquent testimony to the activity, energy and determination of the past and present officers of your company. Nor is your company's dividend anything but satisfactory, if one considers that shareholders have, since the formation of the company in 1887, received £586,500 in dividends, leaving out of account the investment in the Benoni Consolidated Gold Mines, Ltd., which was made almost entirely out of profits, and which would have handsomely repaid shareholders had it not been for the unfortunate failure of the cyanide plant installed at the Benoni mine.

In view of the closing down of underground operations, the work of disposing of so much of your plant and equipment as is not required for the treatment of accumulated waste products was taken in hand in July, and is still proceeding.

Reasonable Return.

Though your mining property is exhausted, I would like to remind you that you own the reversionary freehold rights of your ground, and your directors feel confident that the realisation of this asset, which will take time to effect, will yield a reasonable return on its cost. Lastly, you are also interested to the extent of 1.186 per cent. in the proportion which will accrue to the Central Rand Freehold Proprietary, Ltd., out of the proceeds of the disposal by the Government of the Union of South Africa of the mineral rights over certain bewaarplaatsen, mining stands, machine stands, and water-rights, on the farms Doornfontein No. 24 and Turffontein No. 21, whenever the proposed Bewaarplaatsen Bill, which was introduced at the end of the last Parliamentary session and withdrawn owing to lack of time for its consideration, is placed on the Statute-book.. The small scale on which operations are now carried on made it imperative for your directors to effect economies in every direction. The mine office of your company has been closed, all accounting work centralised at your head office, and everything is being done to reduce the administration expenses. Four of your directors—namely, Messrs. W. T. Graham, H. P. Rogers, E. Renaud and Comte F. de Ferrieres—realising the necessity for the strictest economy, on the 31st of October last, tendered their resignation as directors of your company, while Messrs. F. Elkan (Mr. E. Friedlander's alternate), S. C. Black and myself have agreed to superintend the present operations of the company, without remuneration, till such time as the company is placed in liquidation. I should like here to express the company's sincere thanks to the retired directors, some of whom have been connected with this company for quite a number of years, for the valuable services they have rendered to the company, and also for the readiness with which they have realised the necessity for a reduction in the administration charges.

Benoni Company.

The position of the Benoni Company continues to engage the close attention of your board. As you were informed, negotiations for the absorption of the Benoni property by the Apex Company were for some time continued by the Anglo-French Exploration Company representing the management of both properties; so far their efforts have been futile, and no concrete offer has yet been submitted to the Benoni Board.

Before concluding, I should like to make a few remarks on the future prospects of your company. As stated in your directors' report, the joint-working agreement with the Treasury Gold Mines, Ltd., came to an end in July, so that the operations which are now carried on, and which consist solely of the treatment of the accumulated waste products, are for your sole benefit. It is impossible at this juncture for me to give shareholders an accurate idea of the time during which it will be possible to treat these products and of the profit which may be expected therefrom; suffice it to say that your directors will use every endeavour to turn to account every ton of product which can be treated at a profit.

I should like to record the board's appreciation of the services of your manager, Mr. Richards, and his staff. It is due to his skill that the Jumpers and Treasury Mines were made to last as long as they did. He leaves the company's service at the end of the year, after having been in its employ for a continuous period of five years. I now beg formally to move the adoption of the report and accounts before you.

The report and accounts were adopted unanimously without discussion.

Messrs. W. J. Dold and J. B. Ablett were re-elected auditors of the company.

Bonus to Directors.

Mr. P. L. A. Flanagan said he thought the shareholders would appreciate the services rendered by the four directors who had retired in view of the restricted operations of the company. He thought these directors deserved more than the ordinary vote of thanks. Some of them had served the company for a considerable number of years, and in the circumstances he had much pleasure in moving that this meeting of shareholders expresses its thanks to Messrs. Graham, Rogers, Renaud and Comte de Ferrieres and votes them a bonus of £250 each.

On the vote being put, Messrs. H. Daniel, J. H. Catthrall and S. E. Allen asked to have their votes recorded against the bonus being granted.

In reply to a question, Mr. S. C. Black explained that the directors who were remaining on were not charging any fees, and were saving the company expenses of liquidation. He thought that there was no reasonable argument against the recognition of the services of the directors who had retired, as expressed in the terms of the proposal.

The Chairman suggested that in view of the explanation the vote should be a unanimous one.

Mr. S. E. Allen insisted on having his vote recorded against the proposal, holding that the way in which the directors had managed the company's affairs for so far as the Benoni part of the business was concerned did not reflect any kudos on them.

The vote was adopted with three dissentients and the meeting concluded.

NEW MODDERFONTEIN.

Annual Meeting.

Satisfactory Position.

The annual meeting of shareholders in the New Modderfontein G.M. Company was held in the board-room, Corner House, Nov. 12, Sir Lionel Phillips, Bart., M.L.A., presiding. There were present Messrs. J. H. Ryan, S. C. Black, D. Moses, C. C. Beaumont, S. C. Steil, F. H. Barry, H. J. McCormick, W. T. Graham, G. Sonn, P. Dreyfus, G. Hesse, H. Daniel, J. R. Nicholson, M. Dold, R. Goldmann, H. C. Boyd, H. Eckstein. The total share representation was 152,710.

The Chairman's Speech.

The Chairman in moving the adoption of the report and accounts, said: The result of the operations for the year under review are I think, taking all circumstances into account, satisfactory, the working profit amounting to £559,243, being the greatest in the history of the company. Perhaps it would be well, before dealing with the more technical matters, to make the present financial position clear. The amount earned on working account was £556,084 15s. 3d., the actual balance carried forward to the appropriation account was £578,395 2s. 4d., arrived at after allowing for a credit made up of interest, profit from accumulated slimes, freehold revenue, and a sum of £13,125 6s. 6d., being excess charge in development redemption account on the tonnage milled, and disbursements on account of donations and phthisis compensation fund. The sum of £578,395 2s. 4d., added to £77,060 5s. 11d. brought forward from the previous year, together with a small sum of £121 8s. 3d. from forfeited dividends in terms of the articles of association, raised the appropriation account to £655,576 16s. 6d., which is accounted for as follows: Two dividends each of 15 per cent. absorbed £420,000; profits tax, £54,848 6s.; Government annuity for mining under water rights, £17,310; purchase of water right, £51 1s.; leaving an unappropriated balance of £163,367 9s. 6d

During the year there was spent on the authorised programme of 1910 in connection with the circular shaft £33,547 12s. 10d., and on general equipment £33,727 14s. 6d., shown in detail in the manager's report. From this must be deducted £1,345 15s., resulting from the sale of surplus machinery and plant. The amount of cash in hand towards the completion of the programme referred to was £137,494 18s. 6d. at the close of the financial year. This sum, added to the unappropriated balance, gives an amount of £300,862 8s. in cash and cash assets over liabilities.

I will now turn to the operations of the year. The reduction plant, as you are aware, has a capacity of 52,500 tons per month, but during the year it was only possible to maintain this tonnage for about four months. During the remainder of the year the quantity of ore handled varied considerably in accordance with the supply of native labourers The average number of tons milled per month was 47,000, which shows that with an adequate labour supply there is still scope with the present plant for an average increased working of 5,500 tons per month. To bring home more forcibly the disabilities due to the shortage of labour it may be interesting to compare the number in the company's employ during the last six months of 1912 with the first six months of the present year. The figures were as follows:

Average number of coloured labourers, including contractors, available month by month:

1912.	Number.
July	3,120
August	2,982
September	3,174
October	3,582
November	3,920
December	4,246
1913.	
January	4,588
February	4,747
March	4,410
April	3,996
May	3,560
June	3,146

Since June last the supply of native labour has become still more restricted, falling in July to 2,640, August 2,145, September 1,877, and October 2,010. It is gratifying to note that there was a slight increase of labour last month, and I trust under normal conditions that we may now look forward to an increase in supply. In order to make the best use of the limited amount of labour available it became necessary to concentrate the force in as limited and convenient an area as possible, and it was only by the adoption of this policy that the company was able to handle 40,000 tons, and earn a profit of £47,000 in October. I may here observe that we have not allowed necessary development to suffer for the sake of securing a higher immediate profit, as such a policy would not be in the best interest of the company. Though it is not uncommon in the winter for the native labour supply to fall off, the shortage was greatly increased owing to the strike, and the temporary suspension of recruiting operations by order of the Government.

Value of Ore Milled.

It will be seen that the value of ore milled during the year was 39s. 7d. per ton, or 5s. 1d. per ton higher than that of the previous year. Holding in view that the present ore reserves, exclusive of shaft pillars, comprised 4,351,000 tons of a value of 34.4s. per ton, it is evident that the ore crushed during the year was about 5s. higher than the general average yield of the mine, as reflected by the value of the present ore reserves, but in this connection it is interesting to observe that the ore reserves at the end of June, 1913, were higher than those of the previous year by about 450,000 tons, and that the value had increased from 8.1 to 8.2 dwts. This is due to the fact that during the year there were 626,500 payable tons developed, of a value of 41.6s. It will therefore be seen that, though during the year the value of the ore milled was higher than the average value of the ore reserves, it was less than the actual value of the ore developed during the same period. The policy of milling ore as far as practicable of the average value of all the reserves will be pursued in the future, as in the past, but during the past year, owing to the circumstances already referred to, it was necessary to concentrate in the eastern half of the mine, which is somewhat richer than the entire average. I think it is due to the shareholders to explain this matter clearly, as I have endeavoured to do. Working costs rose by 1s. 3d. per ton over the preceding year, due chiefly to the smaller tonnage handled. While mining costs rose, it is satisfactory to note that the reduction expenses fell by 5d. per ton milled. Under the heading of "Mine and General Expenses" an increase of £14,000 took place. This is chiefly accounted for by the replacement of an ore bin, expenditure during the strike, and other less important items. In his address last year the chairman referred to the amount of preparatory work in hand for the improvement of the transport system underground. This work, which will minimise the amount of labour needed in that branch, is being carried on as rapidly as possible, and is nearing completion. I am not in a position to-day to state exactly when the benefits may accrue, but I am satisfied that the cost entailed will be amply repaid hereafter.

Position in the Mine.

The position in the mine is on the whole highly satisfactory. The rapid deepening of No. 12 shaft, which commands a very large area in the eastern section of the mine, will enable the management to hasten development at many points, and no doubt also to reduce the cost of future development. The connection between this incline and the projected workings from the bottom of the circular shaft should be effected, if all goes well, in the early part of the coming year. An additional outlet will then be provided for the mine, and the ventilation, which is now on the whole good, will be further improved. The chief development is at present being done at the new 9th and 10th levels of No. 12 incline and the two levels started from the circular shaft. The results obtained up to the end of October are as follows:

	Feet exposed.	Inches reef.	Value dwts.
Circular shaft, 1st level, E. and W.	439	15.1	14.7
Circular shaft, 2nd level, E and W.	459	8.6	21.3
No. 12 shaft, 9th level, E. and W.	1075	6.5	77.2
No. 12 shaft, 10th level, E and W.	690	23.0	21.3

Up to the present the development at the circular shaft is not up to the average, but the ground so far traversed is rather disturbed by faults, and it is reasonable to expect that higher values will be obtained when more settled formation is encountered. The work on the 9th and 10th levels is, on the other hand, very encouraging, and indicates the continuation of the high grade ore already developed in the upper levels of this section of the mine.

Shareholders may notice that the stoping width during 1913 was sixty inches against fifty-seven in 1912. This merely betokens a local increased separation of the bands of reef. I merely mention the matter to convey the assurance that no carelessness has occurred in this connection.

The percentage of waste sorted out was also less than during the previous year. This is due to limitation during the erection of the new headgear bin and shortage of labour already referred to.

In conclusion, let me say that it evident from letters received that shareholders appreciate the course followed by the board in fixing the annual meeting at a time sufficiently in advance of the receipt by shareholders of the accounts and reports for them to offer comments thereon. As the result of this course my attention has been drawn to an interesting calculation made by one of our distant shareholders on the subject of ore values. The value of ore exposed during a given period would not have, on the value of ore reserves, the effect mathematically which the figures might appear to indicate, because before increased tonnage can be added to reserves the process of its development has to go a stage beyond mere exposure. The reserves are revalued in blocks at the end of each financial year, and represent, so to speak, stock-taking. The company's position in this connection is quite satisfactory, with a supply of developed ore seven years ahead of the mill. I feel almost inclined to indulge in sanguine prophecies, but will satisfy this inclination by saying that the prospects of the company never looked brighter than they do to-day." (Applause.)

Mr. Daniels asked what progress had been made in regard to the increased crushing plant.

In replying, Sir Lionel Phillips said it was not contemplated at the moment to increase the crushing plant. They had 5,500 tons more capacity than they could supply at the present moment. The board was not unmindful of the future requirements of the company, and therefore plans were being prepared for the extension of the mill at the circular shaft at some future date. They would not like any shareholders to imagine that they were at all contemplating at the moment ordering this increased plant because obviously the time was not ripe, owing for one thing to shortage of labour, and they should be in a position when they did find the labour supply warranted it, to order new plant without delay, and plans were being prepared now so that when the right time arrived no needless delay would take place. He need hardly add that it would be immensely advantageous to a company of the size of the New Modderfontein to crush on a larger scale, because they had a long life and had already seven years' ore reserves in sight. At the same time, it would be folly to erect plant which they could not keep supplied with ore; the board would at the first opportunity, if they felt perfectly confident that new plant could be kept going, take steps to increase the crushing plant, because it would make for decreased cost and increased profits which shareholders always looked for.

Sir Lionel Phillips then moved the adoption of the reports, which was agreed to.

The formal business included the reelection of Sir Lionel Phillips as a member of the board and the reappointment of Messrs. T. Graham and J. G. Currey as directors.

The meeting then terminated.

NOURSE MINES.

Annual Meeting.

Ore Reserve Position.

The seventeenth annual meeting of the Nourse Mines, Ltd., was held in the board-room, Corner House, on November 12, Mr. H. C. Boyd presiding. Those present were Messrs. B. Moses, F. H. Barry, S. C. Steil, H. J. McCormick, J. L. Jordaan, S. M Nelson, Henry Nourse, W. H. B. Frank, A. G. Gill, E. J. Renaud, R. Martin, S. C. Black, H. Eckstein, W. T. Graham. Total representation, 467,788 shares.

The Chairman's Speech.

The Chairman said: The report and accounts now submitted for your approval cover the period of eleven months ended 30th June, 1913. The working profit for the period, £260,508, is the highest yet earned by the company, even compared with that shown in former accounts covering periods of twelve months, the decreased tonnage and grade being more than counterbalanced by a reduction of 1s. 1d. per ton in the working costs, a reduction which is the more noticeable as the development charge had been increased by 1s. per ton. But for the shortage of native labour from which the mine suffered, these results would have been considerably better. As you will have seen from the monthly record attached to the report, it was only during the first three months that the crushing plant could be fully supplied with ore, the average monthly tonnage crushed not exceeding 52,519 tons. The net profit was £241,149 7s. 2d., after including sundry revenue and providing for donations, contributions under the Phthisis Act, and a special charge of £10,000 to development redemption. Out of this profit a net amount of £17,758 15s. 8d. was spent on capital account, the South Nourse ore haulage arrangements representing almost all the expenditure on equipment. The profits tax absorbed £23,945, and dividends amounting to £151,767 were declared, permitting us to carry forward £76,170 represented by cash and cash assets, less liabilities, or some £47,700 more than the amount carried forward at the 31st of July, 1912. In spite of the development footage being increased by 1,437 feet compared with the previous year to a total of 27,805 feet, a decrease in the ore reserves has unfortunately to be reported. As is indicated in the technical reports, a large amount of dead work was done, notably in connection with the underground concentration scheme. This is reflected in the fact recorded that only 64 per cent. of the driving was in reef formation. The disturbed nature of the ground encountered was further responsible for the comparatively small amount of payable ore developed, 512,700 tons. Some main reef leader blocks previously payable were found to fall off in value in the course of stoping and had to be excluded—temporarily at least—from the reserves, which at the close of the period stood at 1,795,600 tons of an average value of 6.6 dwts., the same value, that is, as at the end of the previous year, a slight falling off in the main reef leader and south reefs being counterbalanced by an improvement in the main reef. As you have seen, more than the total cost of the year's development work had been charged out, the board considered it advisable to charge an additional £10,000 to development redemption account, in order that when labour is available development operations may be proceeded with, if possible, on an extended scale. It may be well to mention here that the importance of pushing the development of our mine is fully realised; nothing has been allowed to interfere with the accomplishment of as much of this work as has been possible with the means at our disposal. In the manager's report will be found a brief summary of the results obtained in the different sections of the mine. On the whole, there was no material change underground, values remained much as before, and, generally, the disturbed condition of the formation continued. Interest naturally centres on the South Nourse section, in which as you see a good area of payable main reef was opened up and some payable south reef, the small amount of leader disclosed not being payable.

South Nourse Shaft.

Good progress has been made during the current financial year with the work necessary for the concentration of hauling operations at the South Nourse shaft. The west underground incline shaft has been connected with the South Nourse twentieth level west, improving ventilation in that section of the mine. It should be mentioned that health conditions generally throughout the mine are excellent, thanks to the unremitting care given by the management to this important subject. The east underground incline has also holed with the twentieth level; these connections form important steps in the concentration scheme. The mechanical haulage in the crosscut between the twentieth level and the South Nourse vertical shaft is working smoothly, and that between the east incline and No. 2 incline on that level should be running in a few months' time. Hauling arrangements are virtually completed at the South Nourse vertical shaft, though it is possible that the hoists may have to be electrified, in terms of the agreement with the power company. About four hundred tons are being hoisted daily through this shaft, mostly from the Nourse Section of the mine; the tonnage hoisted here will be largely increased in the near future. Excellent progress has been made in sinking the South Nourse incline, which is now below the plane of the twenty-second level, the station on which is being cut. Before long we may have to consider the question of providing hauling engines for this shaft; it may be economically possible to use the engines now at the west and east underground inclines, but as yet this is uncertain. Otherwise no capital expenditure of any moment can at present be foreseen. A new underground incline, No. 4, which is being sunk from the twentieth level, has reached a depth of a hundred and sixty feet and is progressing well. This shaft starts at a point some 1,000 feet east of No. 2 incline, and will serve the area of the mine lying below the 20th level and cut off on the west from the present main workings in the South Nourse section by the Goch dyke: the existence of this shaft will shortly provide a number of new development faces. Owing to our method of only returning tonnage as developed when the ground is completely blocked out and valued, it is impossible to give exactly the development results of the past four months of the current financial year. Development has amounted to an average of 2,050 feet monthly, and as far as can be judged there is no material change in the ore reserve position. Work is proceeding at every available development face of any importance, but owing to the completion of connections and the cutting of stations we are now at a point when development footage will probably fall off temporarily. Values in depth in the west section have, on the whole, been disappointing, while in the east section the values continue to be good, but the ground remains much disturbed. In the South Nourse section the position is much the same as regards values as at the 30th June. The percentage of payability so far is not so high as in the ground above the Goch dyke, but, after all, comparatively little work has been accomplished. As the consulting engineer has pointed out, we have reason to believe that such reduced grade, if it continues, will be offset by reduced working costs; benefit will certainly come from concentration, but at the same time we must bear in mind that recent legislation and regulations have added, and tend to add, very considerably to our expenditure.

Labour Supply.

Detailed information was supplied to shareholders in the quarterly reports issued in July and October regarding the strike which took place early in the former month, and I need not refer to it further except to say that it will have been made clear that our employes joined, unwillingly as a whole, in a sympathetic strike, nor need I dwell on the serious effects which the strike has had on the men generally concerned through the curtailment of employment which followed owing to the disturbed conditions created by their actions. For this company the ill-effects are seen in the further shrinkage of our labour supply. As the manager's report states, the average number of natives employed monthly during the past financial year was 4,662, or some 200 fewer than during the preceding financial year. There has been a steady diminution in the supply during the past few months, and on the 1st inst. the number employed had fallen to 3,240. In these circumstances, the results recently obtained must be regarded as reflecting credit on the management; an average of 47,725 tons having been milled monthly during the past four months, yielding an average profit of £19,269. Last month a reduction was effected in the comparatively high costs which have recently prevailed, and as I have indicated, we may expect during this year, granted anything like a fair native labour supply, to effect further reductions through the concentration of the hauling arrangements, to the furtherance of which much of the past year's work has been directed.

The Board desires to record its appreciation of the valuable services which the consulting engineer, manager and staff generally continue to render.

The Chairman moved the adoption of the report and accounts, which was agreed to.

Mr. F. Eckstein was re-elected to the Board, and Messrs. S. C. Black and W. T. Graham were reappointed as directors.

The meeting then terminated.

The Killarney Rush.

All records in the Cape Colony diamond digging rushes have been surpassed by the opening of the Killarney alluvial diggings on November 8th. Killarney is about 24 miles distant from Taungs, and quite a township has sprung up in less than a month. There must be about 50 business premises already opened, and it is estimated that fully 1,200 persons pegged out claims after the proclamation had been read by Mr. Rees, Inspector of Claims. The gravel appears to be spread over a large area, but is very shallow, ranging from six inches to three feet. A large number of women and children are present, and the prospects for their comfort are not too rosy. Many old hands think the rush on such a large scale was not warranted.

City and Suburban.

The report on operations at the City and Suburban for the three months ended the 30th of September states that from 70,573 tons of ore milled and treated a revenue of £135,482 was obtained, equal to 38s. 4·737d. per ton. A sum of £20,961, or 5s. 11·284d. per ton, was returned from a special clean up, making the total receipts £156,443. Working expenses absorbed £80,676, or 22s. 10·357d. per ton, which left a profit for the quarter from current work of £54,806, or 15s. 6·38d. per ton, and from a special clean up £20,961, or 5s. 11·284d. per ton, together £75,767. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 3,495. The reef disclosures were as follows: Main Reef: Distance exposed, 670 feet; width, 29·4 inches; assay value, 7·3 dwts. Main Reef Leader: Distance exposed, 1,498 feet; width, 19·8 inches; assay value, 20·7 dwts. South Reef: Distance exposed, 592 feet; width, 16·6 inches; assay value, 10·8 dwts. Totals and averages: Distance exposed, 2,760 feet; width, 21·4 inches; assay value, 14·6 dwts. The capital expenditure for the quarter amounted to £1,223 3s. 3d. A general strike occurred on the Witwatersrand at the beginning of July. The majority of this company's European employees left work on the morning of the 4th, but by the 9th practically all the men were back and the mill was restarted. The works and plant sustained no damage. In consequence of the unsettled conditions, the manager was authorised to clean up the whole of the reduction works, when 5,023 fine ounces were obtained, value £20,961, and included in the quarter's revenue. At the extraordinary general meeting of shareholders, held on the 5th of August, the provisional agreement with the City Deep, under which we purchase fifteen claims from that company, was adopted and confirmed.

Bloemhof Diggings.

The official summary of the diamond production of the district for the month of September shows a total of 6,828⅝ carats, at a value of £25,957 5s. This amount is higher than previously published of stones actually sold, but still remain one of the lowest productions recorded on these fields. The following areas, together with several minor diggings, go to make up the foregoing totals:—

	Carats.	*Value.*
Bloemhof	1,418½	£4,943 3 6
Dievedraai	918⅜	3,844 0 0
Eerstebegin	794¼	3,382 4 6
Eastleigh	446⅝	2,041 9 6
London	500⅞	1,758 0 0
Rietput	345⅞	1,252 17 6
Koppiesvlei	375¼	1,168 12 0
Kamelkuil	281¼	1,141 10 0
Mooifontein	286½	845 15 0
Avondster	251½	834 10 0
Christiana	130¾	636 0 0
Panfontein	193½	468 10 6
Goldgeneg	110¾	453 12 6
Maroetjesfontein	121	452 10 0
Schweizer Reneke	83	440 0 0
Zwartlaagte	70	306 12 6
Vaalpoort	22½	220 0 0
Kareepan	54½	216 15 0
Kuilfontein	62¾	188 0 0
Diamantdoorns	43¾	176 0 0
Modderkraal	39	166 5 0
Matjespruit	19¾	140 0 0
Johannesrust	42¾	115 10 0
Grootdoorns	34¾	114 0 0
Vechtvallei	27	105 10 0
Zevenfontein	34¼	103 0 0

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Gaiety Company	8.15
Standard—Oscar Ashe and Lily Brayton	See bills.
Empire Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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Notes and News.

The late Mr. Von Hessert.

News was received on the Rand last Saturday morning of the death of Mr. F. von Hessert, who was so long and intimately connected with South African mining. Mr. Von Hessert was up to recently a director of the Premier and was also a director of the New Modderfontein. He represented important Continental interests in this country, and was widely esteemed for his keen insight into South African mining finance. His loss is deeply regretted.

* * * *

Zululand Gold Deposits.

Some attention again appears to be given to the mineral wealth of Zululand. Several Randites have recently been making enquiries into abandoned propositions in that part of the Union, and it is interesting to learn that Mr. Laurie Hamilton has recently paid a lengthy visit to the territory. Whilst there are undoubtedly rich deposits in some parts of the country, it is probable that few, if any, would repay working except on a very small scale.

* * * *

The Premier Board.

The annual meeting of the Premier Company has been convened for 13th February at Johannesburg. It appears that further steps are to be taken to consolidate the Barnato interest in the concern. It may be remembered that at the last meeting Mr. Wagner resigned from the board. The election of Messrs. Gustav Imroth and John Munro, representing the Barnato interests, was confirmed. It is now proposed that the election of Messrs. S. B. Joel and R. R. Hollins in place of Messrs. Von Hessert and Jolly should be approved at the forthcoming meeting.

* * * *

The City Deep Prosecution.

The first prosecution under the amended section of the Mining Regulations relative to permitting men to work in a portion of a mine containing "dust, smoke or fumes perceptible by sight and smell," resulted in Mr. Percy Sherwell, the acting manager of the City Deep, being fined £50 on Thursday. From Mr. Sherwell's evidence, it would appear that there was some misunderstanding between the resident engineer and the man who worked the ventilation fan, which resulted in the fan not running at its full capacity at the time of the inspector's visit. The outstanding feature of the prosecution appears to us to be that the law invests the manager with all responsibility for negligence or error on the part of all subordinates and employees. Without the full co-operation of employees cases such as that brought before Mr. Van den Berg on Thursday morning must be of frequent, if not everyday, occurrence. Nowadays it is humanly impossible for any one man to manage a Rand mine to the satisfaction of shareholders and at the same time make it his own particular business to see that the many sections of the Mining Regulations are enforced. The scope for errors and misunderstandings in a large mine is enormous, and unless all employees are imbued with a sense of responsibility at least as great as that of the manager himself, the man in charge, no matter how great his energy and abilities, is, according to the law, bound to be a continual transgressor of a multitude of regulations.

* * * *

The New Regulations.

At a recent public function a speaker referred to the manner in which new regulations were "shot out" by the Mines Department. Probably he was thinking of the modern rapid firing gun, which fires so many shots per second, for there is no doubt that the rate at which new orders, and variations of old ones, are issued is such as to create almost as much confusion as real projectiles. In fact, a vast number of mine managers do not hesitate to say that the situation is fraught with actual danger. The rules had passed into the sub-conscious memory, and though probably few managers could cite the exact phrasing of a rule they all knew just what was and what was not permitted. But now that all the old rules have gone into the melting pot, now that mines are managed—as some claim they are—from the Mines Department; now that scarcely a month passes without the issue of new or revised regulations, the manager's mind is in such a state of confusion that he may well be excused even if he forgets the most elementary precautions. That he can assimilate the changes so rapidly as they occur is an impossibility. So much additional personal responsibility has been heaped upon the manager, that it is not sufficient for him to say to this departmental officer, "You must familiarise yourself with these regulations," and to that official, "You must learn to carry out these." The manager must know them all himself.

* * * *

Randfontein Restricting Milling.

The huge milling installation of the Randfontein Central Company ran to good purpose during the nine months ended with September last, no less than 1,968,846 tons of ore being crushed. During the last three months of the quarter, however, operations were much restricted by a shortage of native labour. So acute has the position become in this regard that the management has decided, so we learn, to henceforward suspend milling operations on Sundays. The profit for the nine months was £716,935. Development was vigorously prosecuted during the period under review, and at the end of September the ore reserves were 8,485,554 tons, as against 7,600,000 tons at the end of 1911.

* * * *

Damaraland Diamonds.

Reuter at Berlin says that Dr. Solf has conferred with those connected with Damaraland Diamonds at the Colonial Office, and the Minister emphasised that he would not fail to take account of the market conditions and so obtain the highest possible prices for diamonds. He would see that unduly large consignments were not placed on the market. Furthermore, as the Regie was at present too cumbersome, he would call in the whole of the shares on behalf of the Treasury, and appoint a new supervisory Council. Diamond producers are agreed in principle to Dr. Solf's proposals.

* * * *

Strike Legislation.

The new Strike Settlement Bill, which is about to be presented to the New Zealand Parliament, provides, *inter alia*, for a board representing both employer and employees, which will investigate all labour grievances and make such recommendations as seem advisable for settlement. If an agreement cannot be reached a vote will be taken and a bare majority will suffice to decide the issue submitted. Another provision in the Bill is that if a union has voluntarily or penally had its privileges cancelled and a new union has been formed, the new union may not include in its membership any who have taken part in an unlawful strike. By this law all differences will be adjudicated by this commission and every worker and employee who, being bound by an award of the court, shall take part in a strike will be liable to a penalty up to £10 and a union which promotes it to a penalty up to £1,000, and anyone who aids in a strike, even by contributing to strike funds, will be penalized. The stand being taken by the Government against lawlessness and mob violence would indicate that this element in the conduct of strikes must be obliterated and a speedy, peaceful and sane means substituted.

* * * *

Daggafontein.

The report of the Daggafontein Gold Mining Company, Ltd., for the year ended June 30 last, states that the property remains as at the date of last report, with the exception of a small area, in extent 2 morgen 280 roods, which has been expropriated by the Railway Administration for the purpose of extending station sidings. The area is situated in a remote corner of the farm, and the expropriation will not interfere in any way with the company's operations. Sinking on the No. 1 shaft, which at June 30, 1912, had reached a depth of 1,158 feet, has been steadily continued, and during the year 1,242 feet were sunk, making the total depth as at the close of the year 2,400 feet. Since that date a further 370 feet had been sunk at September 30, when the total depth was 2,770 feet. The board is advised that in the normal course of events the reef should be reached during March next, or shortly thereafter. The average labour employed on the property consisted of 39 whites and 302 natives. Only small additions have been made to the surface equipment. Since the close of the year electrically-driven centrifugal pumps have been put in as a permanent pumping installation. The company has arranged for the sale of its surplus water up to a maximum of 500,000 gallons per day to the Rand Water Board at a satisfactory price. Arrangements have been made whereby Henderson's Transvaal Estates, Ltd., advances such money as is required to enable the shaft to be carried down to the reef. The report of the Daggafontein Prospecting Syndicate, Ltd., covers the year ended June 30 last. The profit and loss account shows a loss for the year of £395, reducing the balance at the credit of profit and loss to £3,032. The exploratory work for tin in German South-West Africa, in which this company was interested, has been abandoned. The syndicate has acquired an interest in Ex-Lands Nigeria, Ltd.—consisting of 5,000 shares of 2s. each—a company having a regular output of tin.

* * * *

S.A. Option Syndicate.

The report of the South African Option Syndicate, Ltd., for the year 1912, presented at the meeting on the 4th inst., states that £3,847 was spent on the prospecting and development of the diamond areas, bringing the total to the debit of diamondiferous areas to £84,351. This amount has been reduced to £64,249 by writing off £20,102, the amount standing to reserve. On the Wessels area 2,748 feet of driving and sinking was accomplished, and on the advice of Mr. Minett Frames a further 1,648 feet of sinking has since been carried out on the extension of the fissure. Washing tests by hand rotary of 1,710 loads of mixed fissure ground yielded 174 diamonds, weighing $16\frac{5}{8}$ carats, the stones being of good quality, though small. Work on this area was continued up to the end of June of the present year, when, as the results of the washing tests proved the ground so far opened up to be unpayable, it was decided to close down work. On the Somabula alluvial field the licences received from diggers amounted to £207. The finds registered by the few men actually washing totalled 466 diamonds, weighing $580\frac{7}{8}$ carats. An encouraging feature of the work more recently carried on at Somabula has been the discovery of new diamondiferous strata at far greater depth than previously encountered. For whereas practically all the diamonds recovered prior to last year were found above the 30 feet level, or down to what hitherto had been considered bedrock, in several instances they are now being found at the 60 feet and 100 feet levels. When it is also understood that no finds of importance have hitherto been made outside an area of some 800 yards square, the outlook for the possible existence of a rich pipe in the vicinity must appear more hopeful than for some time past. From 1905 to the end of the year 1912 the syndicate recovered 6,579 carats from the Somabula field, and during the same period as far as recorded individual diggers washing intermittently recovered a total of 1,911 carats. In the present year for the eight months ended 31st August the recovery of a further $465\frac{5}{8}$ carats by diggers has been recorded. From the test washings made from time to time on the Bembesi areas the syndicate has recovered to date 102 carats. The total yield, therefore, of diamonds from all sources so far as is officially known up to the end of last August amounts to 9,058 carats of an estimated value of £36,232 or an average of £4 per carat. The number of licensed diggers at Somabula has considerably increased during the last 12 months, the total now being 25 actively employed either in prospecting or washing operations. Now that the syndicate has suspended prospecting work on its own account, all expenses have been reduced to the lowest figure possible while awaiting the entrance of the Connemara mine into the list of gold producers and the results of the independent operations now continuing at Somabula, which are in a decidedly interesting stage.

Nile Valley and the Rand.

It is a far cry from the Nile to the Rand, yet the annual meeting of the Nile Valley G.M. Co. was held here on Monday. No report of the proceedings was available for publication. The directors of the concern, however, have issued a report in London, which is likely to surprise the shareholders. The directors (by-the-bye, how many of these gentlemen attended the gathering?) explained that the meeting was to be held in Johannesburg "in order to fully comply with the South African Company Laws," but they said nothing of holding a meeting in London, though, of course, they do not need to be reminded that nearly all the shares are held there and that any meeting held in Johannesburg can only assume the character of a legal farce. The *London Mining World* says:—"Having supported the board through all the vicissitudes of the company, and now giving them credit for the very best intentions, we strongly advise them to convene a meeting in London, when, we feel sure, they will find in the shareholders who attend it, an indulgent audience. They are working a property in the desert and the great trouble has been that of transport. They are taking steps, without any expense to the company, to get over this difficulty, and the explanations they may have to give at the meeting we feel sure would be received with consideration by any fair-minded body of shareholders. Let, then, the meeting 'to fully comply with the South African Company Laws' be held in Johannesburg, but let there also be a meeting in London at the earliest practicable moment."

* * * *

Henderson's Transvaal Estates.

The directors of Henderson's Transvaal Estates Company, in an interim report, state that the reorganisation of the company, which was approved by the shareholders, has now been successfully carried through. A pamphlet gives some particulars of the properties and assets transferred to the new company, with the exception of those already sold. The board made arrangements for a guarantee of 600,000 shares of 5s. each out of a total of 737,560 shares which are to be offered for subscription by the shareholders in the proportion of one share for every three shares at present held, the subscription of each of such shares carrying the right to call a further share from the company at par (5s.) at any time within two years from the date of allotment of the guaranteed shares. Sales set out have been effected at a profit of about £14,000 on the book values, and the directors are advised that further sales will probably be effected before the end of the financial year on December 31 next. Tweefontein Colliery (a subsidiary company) in respect of 1912 paid a dividend of 15 per cent. and has now declared a dividend in respect of the first six months of the current year of 1s. 6d. per share, being at the rate of 15 per cent. per annum. Sales and profits are well maintained, and with the expansion of the export trade, appear likely to increase. The negotiations for the establishment of a power station and chemical factory on the property are still in progress, and when effected should largely increase the company's business. Henderson's Company's income for the past year from its holding in this company amounted to about £12,000. The net profits of Delagoa Bay Development Corporation continue to expand, and for the third year in succession a dividend of 3 per cent. has been paid on the ordinary shares after making provision for depreciation. During the portion of the current year which has elapsed, the net income has shown further expansion, and this improvement appears likely to continue. The company's income for the past year on its holdings in this company amounted to £3,123. The seven-compartment shaft of the Daggafontein Gold Mining Company has now reached a depth of 2,770 feet, and under ordinary circumstances the reef should be encountered by the end of March, 1914. The importance of this to Henderson's Company is very great, and there is every hope that the values proved will be on the same payable scale as has been the case on the other Far East Rand properties which have recently reached the productive stage. Other interests are dealt with, such as those of the Daggafontein Prospecting Syndicate, the cement factory, the exploratory work recommended on Vryheid.

TOPICS OF THE WEEK.

TRADE UNION TENDENCIES.

In view of the recognition of trades unions in South Africa, employers of labour here should afford to ignore no move or tendency of the unions in other countries. Thus, in the United Kingdom we notice that there has been for some considerable time past a tendency of trade unions in the direction of closer relationship, by either the amalgamation or the federation of those relating to particular trades. The Miners' Federation of Great Britain perhaps is the most notable example, and the process is going on in other industries than that of coal-mining, the underlying object, of course, being that the central executive may be able to call upon the combined strength and resources of the whole as occasion arises, not only to deal with a dispute of national dimensions, but if necessary, to support the demands of some local branch. The whole question of trade union federation, indeed, is one which deserves more serious attention than it has yet received, when we remember that centralisation is one of the objects of what is known as Syndicalism. As a means to the main end of rendering all private-controlled industries unprofitable, and transferring the ownership to "the people," the promoters of that movement advocate vesting supreme authority in a central executive having control over all classes of organised labour. Their more ambitious schemes are visionary enough, and no doubt the present trade union leaders are by no means enamoured of the prospect of losing most of their authority and, may be, part or the whole of their salaries under such a system; but federation seems to be a step in the direction in which the Syndicalists are pointing. On the other side we have the recent announcement that a British Employers' Union has been formed, with a prospective capital of no less than 50 million sterling. Little more has been heard of the scheme, and no prominent captain of industry appears to be associated with it in any way; but it must be admitted that the development, or the idea behind it, is a very natural one. We see the forces of Labour gradually federating in order that they may more easily attain their ends, and it would not be surprising if Capital followed a similar course, especially as it now has to combat the new trade unionsim, which is for ever agitating for fresh concessions, only to break faith if it secures them. The lesson doubtless will not be lost on this country.

LAND SETTLEMENT IN RHODESIA.

The pamphlet issued by the British South Africa Company, containing "proposals for the encouragement of land settlement and immigration," must be regarded as a document of first-rate importance, since it marks the dawn of a new era in Rhodesia, an epoch in which the question of land settlement will be the chief consideration of the company. It is hardly necessary to point out that Rhodesia's great need is white population, and it is equally unnecessary to point out that only by a broad and liberal land settlement policy can the numbers of white inhabitants in the country be materially increased. The area of Southern Rhodesia is approximately 95,000,000 acres, but of this more than one-quarter is absorbed by native reserves, leaving about 70,000,000 acres to be considered. Less than 48,000,000 of these acres are owned by the B.S.A. Company, and nearly 22,500,000 acres are held by companies and private owners. It may be assumed in present circumstances that only land situated at 3,500 feet above sea level is fully adapted for European occupation. The land in the hands of the company meeting this requirement is about 23,000,000 acres. The immediate problem is how to populate the land within the 25 miles from the railway zone, of which the company owns 8,500,000 acres. With a view to promoting settlement it is proposed that a Land Settlement Board shall be constituted in Rhodesia by Ordinance of the Legislative Council, and that a Commissioner of Land

Settlement in Great Britain shall be appointed. It is proposed that the British South Africa Company shall advance the Land Settlement Board up to £250,000 at fair rates of interest to advance this scheme. The pamphlet is brimful of valuable and thought-compelling data and proposals, and the moral of it all is that it is high time our own Union Government should wake from its lethargy in regard to the all-important question of land settlement and initiate some live policy similar to that which the Chartered Company now proposes.

THE OFFICIAL REPORT ON THE JULY DISTURBANCES.

Lengthy extracts from the report of the Commission appointed to enquire into the Rand disturbances of last July have appeared in the daily Press this week, and a brief summary of that very convincing document will therefore here suffice. The Commission was composed of two of our most able Judges, Sir Johannes Wessels and Mr. Justice Ward. It examined upwards of two hundred witnesses, and left nothing undone to sift the evidence and get at the facts. Though somewhat hampered by the fact that the Union workers refused to give evidence, it seems to us that the Commission has been completely successful in arriving at the truth, and in fairly apportioning the blame. Dealing with the initial troubles on the Kleinfontein Mine, the report gives an account of the various stages of the dispute, which are now generally known, and proceeds to point out that the Minister of Mines had acted in error in assuming that Mr. Bulman could be prosecuted under the Industrial Disputes Act. There is no sanction attached to Section 5 (1a) of the Industrial Disputes Act, and it is, to say the least of it, very doubtful whether there can be prosecution for a breach of Section 5 (1a) unless a dispute affects at least ten men. It no doubt incensed the men that the Kleinfontein management thought it was allowed to treat the law with impunity, and that no steps should be taken by the Crown to punish wrongdoers. The Mines Department did not point out to the employers their error, for the simple reason that they also had put the wrong interpretation on the law. The notice issued by Mr. Bulman, upon the advice of Mr. Steyn, assumed that the New Kleinfontein management had broken the law, and, therefore, the men can well be pardoned for their error. Moreover, the natural reading of Section 5 (1a) by the layman would lead him to believe that the Industrial Disputes Act had been broken by the New Kleinfontein management. It is probable that the correct view of the situation at that time is that the law was not actually broken by the New Kleinfontein management, inasmuch as there were only five men, and not ten, as required by the Act, involved in the dispute. Yet, as the matter was not quite clear, and as the miners were of the opinion that there was a breach of the law, it would probably have been wiser for the Crown to have instituted proceedings and to have obtained a judicial interpretation of the law. The report comes to the following conclusions as to the Kleinfontein dispute. As to the Mines Department, the report states, it would seem that the local officials of the Mines Department foresaw the seriousness of the situation, and that it was anxious to bring about a settlement, but that its intervention could never have been effective as long as negotiations on behalf of the Department were carried on by men who were only holding acting appointments at the time, and, therefore, without prestige. No intermediary acting on behalf of the Government could have hoped to succeed, unless he were clothed with plenary powers. Delicate negotiations such as these could not be carried on over the telegraph wires. It was essential to success that some person on behalf of the Government, with full powers to act, should have been able to discuss exhaustively, with the management and with the representatives of the men, the pros and cons of the dispute, and to persuade both parties to do what was just and equitable. If, after such an attempt, there was still a determined effort actively and unlawfully to incite to violence or to a breach of the Statute, the Government would have been in possession of all the facts and could have viewed them in their true light. It could have determined on its policy with a full knowledge of all the circumstances. The absence of a negotiator of high standing must have greatly weakened the influence of the Mines Department. The neglect to enforce the Industrial Disputes Act caused the strikers to conclude that the Government was treated as a nullity. As to the Kleinfontein Company, the Commission finds that the rash and inconsiderate act of Mr. Bulman altering the hours without notice or consulting with the men, put the Kleinfontein Company morally in the wrong. The company's action may not have been an illegal act, but it was an act which tended to provoke the employees, and was certainly against the policy of the Industrial Disputes Act. Having been in the wrong, the moral responsibility for settling the dispute, as pointed out by the Minister of Mines, lay with the company, and, without necessarily creating any precedent, it should, it is thought, have acted upon the suggestion of the Minister of Mines, met the men's representatives, and at once reverted to the old Saturday regulations until such time as both the management and the employees could come to a satisfactory understanding. Had it done this and the strike still continued, no blame could have attached to the company. It seems quite clear that the directorate of the Kleinfontein Company were bound by the general policy of the various mining groups, and were as bound to the dictates of the mining groups as the Union workers were bound to the representatives of the Trades Unions. The directorate of the New Kleinfontein made the settlement difficult in the first instance by ignoring the men's representatives, and, afterwards, by introducing strike-breakers, who had to be guarded with a great force of police and military. It would seem that neither the Kleinfontein Company, nor the Industry, nor the Government, realised during the early part of the strike that unless it were brought to an end speedily, it would spread throughout the mines of the Witwatersrand. As to the men, it is said that they undoubtedly thought what they considered a breach of the law on the part of the Kleinfontein Company gave them an excellent lever to demand from the company concessions which, in the ordinary course, they did not feel hopeful of obtaining. They made any settlement difficult because they constantly shifted their ground as they thought their power to extract concessions increased. They mixed up a simple dispute as to whether the company was right in altering the Saturday hours of five mechanics with an eight hours' bank to bank Bill, and with the policy of acknowledging Trade Union representatives' right to interfere in a domestic dispute. If the men honestly wished to settle the original dispute, they did not realise that, unless demands are crisply formulated and adhered to, it is extremely difficult for the parties themselves to settle a dispute, and almost impossible for an intermediary, such as the Government, to do so. Whatever the fault of the Kleinfontein Company may have been during the earlier stages of the strike, after June 1 the company offered to concede all that the men had demanded at the start, and it was their duty, if they wished to avoid trouble, to have accepted the terms, especially as they were, after June 11, prepared to adopt them. After the strike-breakers were introduced, the passions of the men were so strongly aroused that a settlement on a just and reasonable basis could then hardly be hoped for. The refusal of the men to work with the strike-breakers, and of the company to discharge and compensate them, was bound to lead to a trial of strength, for, under these circumstances, the men could only hope to win if they could bring about a general strike. From this it is plain that though all parties were in some degree to blame, the Minister of Mines comes worst out of the affair. His colleagues in the Cabinet naturally were guided and informed by him of developments, and plainly he did not attach due weight to the views and advice of his representatives on the spot. For the work of the Commission we have nothing but praise. They have acquitted themselves of a difficult task with a skill and acumen worthy of the highest traditions of the South African Judiciary.

CROWN MINES AND CITY DEEP.

Progress of Sinking in the New Circular Shafts—Effects of Labour Shortage—Recent Profit Earning and Development Returns.

Probably no two other concerns under the control of the premier mining corporation of the Witwatersrand—the Central Mining and Investment Corporation—engage more attention at present than the Crown Mines and City Deep. Each proposition is capable of better performances than have been disclosed during the current year. Each may be accounted one of the leading gold mines of the world, and at both strenuous efforts have of late been made to improve underground working conditions. The doings of these two companies are thus followed with the very keenest interest in Europe and in South Africa, and accordingly some study of the positions obtaining at these properties, as reflected in the quarterly reports just issued, seems to be called for. In the first place, attention may be directed to the progress attained in sinking the new circular shafts.

The New Shafts.

At each property round shafts are being sunk to improve underground ventilation and health conditions. Both these shafts are modelled on the lines of the circular vertical shaft recently completed at the New Modderfontein, and are 18 ft. in diameter. The shaft of the Crown Mines is being sunk in the western section of that property, whilst the City Deep shaft is being sunk about midway between the existing east and west vertical rectangulars. At the Crown Mines the new shaft had reached a total depth of 437 feet at the end of September last, and bricking had been completed to 321 feet. The permanent equipment is now finished, and better progress will be practicable. At the City Deep the depth of the new circular shaft at the end of September was 200 feet. Here, too, sinking operations were hampered by the erection of headgear, engines, etc., but, as this work has now been finished, the rate of sinking may be expected to improve materially. As to recent productive and development operations, the returns of both companies reflect the effect of the strike and the resultant disorganisation of the native labour forces.

Shrinkage in Labour Force.

At the Crown Mines the native labour force at the end of the September quarter was 10,483, as compared with 13,434 at the end of June, whilst at the City Deep mining and milling operations throughout the quarter suffered severely from the shortage of native labour. Of its complement of 5,700 natives, the company had in its service on 30th September only 3,942, and, as it is essential that work on shaft sinking and development be not curtailed, working costs and profits have had to suffer in consequence. Development operations first call for mention. On account of native labour shortage the development footage during the September quarter was less by 3,979 feet than in the preceding three months, but the reef disclosures were again satisfactory.

Details of Development.

Particulars of development work at the Crown Mines are as under: Number of feet driven, sunk and risen, exclusive of stopes, 6,325. The reef disclosures were as follows: Main Reef Leader: Distance exposed, 1,720 feet; width, 23 inches; assay value, 66s. 9d. South Reef: Distance exposed, 1,000 feet; width, 35 inches; assay value, 49s. 4d. At the City Deep the progress made in shaft sinking and development operations, in the face of an acute shortage of native labour, is satisfactory. No. 1 vertical shaft attained a depth of 3,586 feet; the bottom is in hard dyke, making sinking difficult and slow. No. No. 2 shaft, the east incline was sunk 149 feet and the west 145 feet—the total depths being 773 and 476 feet respectively. The circular shaft was sunk 125 feet, making the total depth 200 feet from the collar. Sinking operations were hampered by the erection of the headgear, engines, etc. This work is now completed, and the rate of sinking should materially improve. The total footage of development for the quarter was 5,518, and, compared with the operations of the previous quarter, shows an increase of 189 feet. The average of the Main Reef Leader disclosed over 3,105 feet sampled has given a return of 611 inch dwts. As to revenue earning operations, the Crown Mines earning was £363,729, or 13s. 2d. per ton. The yield, at 29s. 1d., is lower by 8d. per ton. Surface sorting was curtailed at No. 5 shaft, as in several South Reef stopes in this section a rich stringer of free gold associated with only a few isolated pebbles on the footwall, is in existence, there being a possibility that some of this rock might be sent to the waste dump. The tonnage crushed was 27,600 tons lower. Working costs were at the rate of 15s. 11d. per ton.

Revenue and Profits.

The City Deep Company's profit was £61,661 (11s. 11d. per ton) for the three months, working expenses ruling at the relatively high figure of 26s. 8d. per ton, of which mining claimed 16s. 10d. and development redemption 3s. 3d. The financial positions of the two companies at the end of the September quarter may be expressed as under:—Crown Mines: Government tax (estimated)—For the six months ended 30th June, 1913, £63,893; for the three months ended 30th September, 1913, £35,621; total, £99,514; debenture issue expenses, £875; dividend account—interim dividend No. 24 of 55 per cent., declared 26th June, 1913, £517,058; balance carried to balance sheet, £614,547. City Deep: To Government tax (estimated)—For the six months ended 30th June, 1913, £14,479; for the three months ended 30th September, 1913, £5,600; total, £20,079; dividend account—interim dividend No. 2 of 10 per cent., declared 26th June, 1913, £125,000; balance carried to balance sheet, £184,208. It should be noted that in neither case is the credit balance of appropriation account wholly available for distribution. At the Crown Mines the net capital expenditure for the nine months ended 30th September, 1913 (£47,872 on property development and equipment, and £14,984 in respect of annuity for undermining rights), has not yet been appropriated. The amount to be transferred from appropriation account will not be determined until the end of the financial year, and after it has been decided what further dividend is to be declared. At the City Deep the proceeds from the sale of 15 claims to the City and Suburban Gold Mining and Estate Company, Ltd., and the expenditure on undermining rights annuity (£4,920), development and equipment account (£55,499), will not be transferred until the close of the financial year. Both these concerns are well placed as regards development and equipment. An improvement in the native labour force would quickly be reflected in the statement of profit earnings.

Notice is given that the Moodies Gold Mining and Exploration Company, Ltd., intend applying for certified copies of—(a) Deed of transfer No. 429/1884, made on the 5th June, 1884, by George Pigot Moodie in favour of the said company, whereby certain quitrent farm named Oorschot No. 29, district Barberton (formerly No. 1003, district Lydenburg), Ward Crocodile River, in extent 4117 morgen 107 square roods, was conveyed; (b) certain deed of concession No. 89, made on the 31st July, 1885, by the Government of the South African Republic in favour of the said company, whereby the full, free, exclusive and perpetual right to all gold reefs and other mines, minerals, ores and precious metals and precious stones in, upon or under the said farm Oorschot No. 29, district Barberton aforesaid, with the exclusive right to prospect and search the said farm under the conditions in the deed contained were granted and assured.

DIAMOND COMPANIES AND SYNDICATES.

A Brief Directory of Concerns Now Attracting Notice.

II.—PARTICULARS OF ADDITIONAL VENTURES.

In continuation of the particulars contained in our last issue of diamond companies and syndicates which are now engaging much public attention, we this week give details as to directors, capital, etc., of two other revived concerns which are at present attracting considerable notice. The companies in question are the Crown Diamonds and Frank Smiths.

Frank Smith Diamond Estates and Exploration Company, Ltd.—Registered, London, March 29, 1900; reconstructed July, 1911. Office: 10 and 11 Austin Friars, London, E.C. Johannesburg Consolidated Investment Company, Ltd., secretaries. Office in Johannesburg: Johannesburg Consolidated Investment Company, Ltd. Kimberley Agents: W. S. Harris, H. S. Harris. Consulting Engineer: J. Esson. Directors: London: E. Turk (Deputy Chairman), A. A. Knight, A. R. Stevenson. Africa: G. Imroth (Chairman), G. Sonn, J. A. Cohen, T. G. McLelland (Managing). Accounts—June 30. Meeting—(London) November 6, 1912. The cash available after reorganisation was £105,000. Capital—£300,000 in 800,000 shares of 7s. 6d. each, issued £201,843. In 1911 the shares, formerly of £1, were scaled down to 7s. 6d. each, and capital restored to former nominal amount. In issue July, 1911, 275,000 shares; applied to acquisition of Welgelegen Diamond Company's assets, 63,250 shares; subscription at par, guaranteed by Messrs. Barnato and Ehrlich, 200,000 shares; option at par till June 14, 1914, to guarantors, 200,000 shares. The Messrs. Barnato and Ehrlich are interested. Property—Farm area in Barkly West, some 41,000 acres, also 625 diamond claims that formerly were dealt with by the Windsor, Welgelegen and Frank Smith Diamond Companies. The claims were intermittently worked for several years. On Frank Smith area immediately prior to the war 114,239 loads washed gave a yield of 6,860 carats, or an average of 6·13 carats per 100 loads. To the closing down of operations, October, 1907, some 1,170,000 loads (including overburden) washed gave an average yield of just 3½ carats per 100 loads. Some 170,000 loads of blue washed gave a yield of 4·81 carats per 100 loads. The average price obtained for 37,000 carats of diamonds was 58s. per carat. An entirely new washing plant, with capacity of 4,000 loads per day, has been erected. In the Frank Smith section the overburden has been cleared off and only blue ground will go to the treatment plant.

Crown Diamond Mining and Exploration Company, Ltd. —Registered, S.A., November 13, 1908, to acquire the assets of the Lace Diamond Mining Company, Ltd., registered 1899, and having a capital of £325,000. Head office: Lewis & Marks' Buildings, Johannesburg. African and European Investment Company, Ltd., secretaries. London office: 34 Bishopsgate, E.C. Directors: J. Emrys Evans (Chairman), Isaac Lewis (alternate A. C. Mallinson), S. Marks (alternate G. Falcke), W. Ross. London Committee: H. D. Lewis, G. E. Duveen. Capital—£125,000 in £1 shares; 100,000 shares issued, 75,000 to vendor and 25,000 at par for working capital. Property—This company acquired the assets of the former Lace Diamond Mining Company, including the freehold of farm Ruby, 1,378 morgen, and adjoining farm Driekop, 956 morgen. On farm Ruby is the diamond mine, situated about 17 miles north-west of Kroonstad, Orange Free State. The company is exempt from the 40 per cent. tax levied on some diamond mines in Orange Free State. At end December, 1907, there were reported to be on the floors 566,209 loads matured "blue" ground. In 1909 the mine was dewatered and preparations made for substituting new crushing plant for old gear. Operations were suspended March, 1910, and were recently resumed. During last month the company washed 15,519 loads of ground, yielding 1,559 carats, or an average of 10·04 carats per 100 loads. Washing operations were hampered during the early part of the month by rain.

Durban Roodepoort Deep.

The report for the three months ended the 30th of September of the Durban-Roodepoort Deep embraces the financial position of the company as at the 30th of September as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £14,564, and cash at bankers and value of gold in transit, £33,643. The liabilities are sundry creditors on account of loans, dividends, stores, wages, Government tax, etc., £33,795, and the balance brought from appropriation account is £20,946. Working revenue and expenditure account received from gold realised £98,046, or 28s. 5d. per ton milled. Working expenditure absorbed £86,617, or 25s. 1d. per ton, which left a working profit of £11,429, or 3s. 4d. per ton. There is a charge for sundry expenditure against this working profit of £48, under the Miners' Phthisis Act Fund of £1,335, and strike expenditure £2,020, which left £8,026 carried to appropriation account. The balance of working expenditure and revenue account for the previous nine months was £47,210. The charges against this sum are: Government tax (estimated) for nine months, £4,264; interim dividend, £22,000; and the balance, £20,946, is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The amount of liability at the commencement of the financial year (£4,407), together with capital expenditure for the nine months ended the 30th of September (£8,232) has not yet been appropriated. The amount to be transferred from appropriation account will not be determined till the end of the financial year, and after it has been decided what dividend is to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 2,916. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,385 feet; width, 28 inches; assay value, 38s. 8d. South Reef: Distance exposed, 740 feet; width, 11 inches; assay value, 740s. The tonnage crushed was 68,970 tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 29s. 5d. The total yield was 23,376 ozs. fine gold, and the total yield per ton was 28s. 5d. The sinking of No. 1 incline shaft has been resumed, and the western sub-incline shaft commenced. The footage of development work was 654 less than for the previous quarter, but the work in connection with the 12th level main haulage scheme was not curtailed. Development values on both reefs continue satisfactory, and reef disclosures on the South Reef in the 12th level drives east and west of No. 1 shaft, just commenced, are up to the average of the mine. The mine continues to suffer from a serious shortage of native labour. On the 30th of September there were 2,037 natives employed, against the allotted complement of 3,145. On this account it has been necessary to increase the proportion of rock mined by machines; of the tonnage mined in September, 31 per cent., was broken by machines, compared with 15 per cent. in June. The scarcity of labour was responsible for the curtailment of development operations and also for the decrease of 11,080 tons milled. Working costs have increased 1s. 6d. per ton for the same reason. The new pumping plant at the 12th level, No. 1 shaft, was started in September, and is running satisfactorily. Arrangements are now in hand to transfer the water from the western section to this plant. The expenditure on account of capital amounted to £1,167, and it is estimated that a further sum of £5,332 will be required in respect of authorised votes.

Diamond Hunt that Failed.

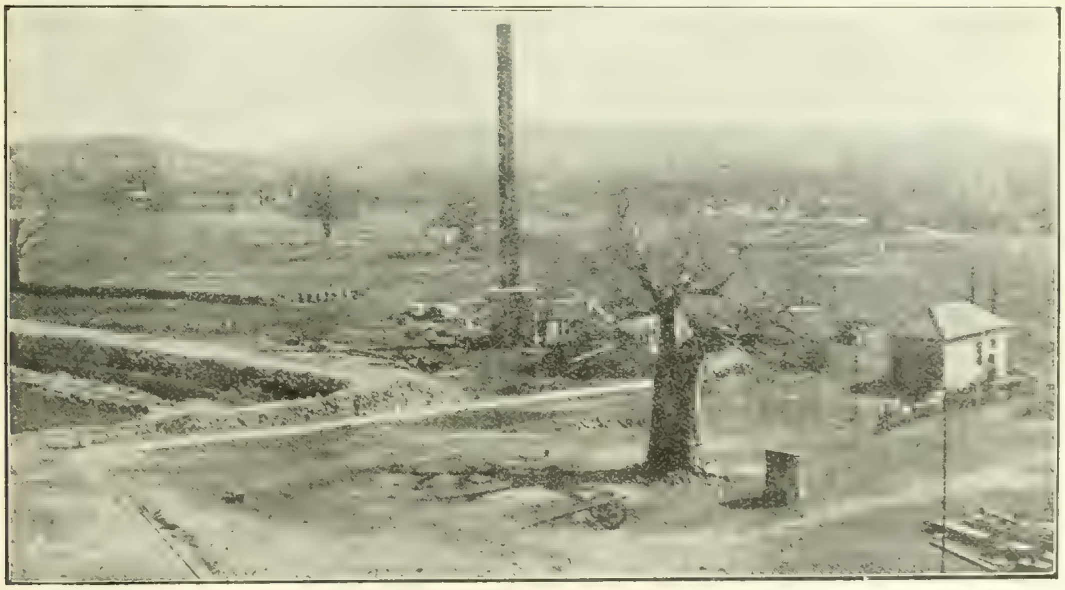
The Potchefstroom *Herald* is telling the story of the collapse of the expedition to locate a wonderful diamond mine, which was supposed to exist in the waterless desert beyond the Limpopo, near the border, and across which a "dash" was to be made by the party, accompanied by a native guide, who was said to have previously brought out two lots of precious stones. The story was, of course, a pure myth. Mr. A. Dastre, who found the capital for the expedition, has lost his money, and prosecutions are now said to be impending.

THE MESSINA COPPER COMPANY.

A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

IV.—THE SMELTERS—THE ZAND RIVER PUMPING SCHEME—ELECTRICAL MACHINERY OF THE MINE.

One of the most important events in the history of the Messina Company during the past year has been the commencement of smelting operations. The technical management of the concern has all along borne in mind the advisability, in fact the urgency, of initiating a well-advised smelting policy, for even the richest mines—and Messina is unquestionably one of the richest copper mines of the world—cannot be expected to earn profits commensurate with its true value by shipping high grade selected ore and rich concentrates. It must be obvious that, no matter how high grade the ore, railage and shipment charges on material which is not metallic copper represent so much potential loss to the company. For instance, chalcocite or glance ore, which theoretically contains about 80 per cent. of metal when shipped in its purest state, represents 20 per cent. of sulphur, on which freight expenses have to be met, and which yields no revenue. On chalcopyrite and erubescite ores, which contain iron as well as sulphur, the charges in respect of transporting worthless material are, of course, higher. Even the amount of money expended on the transport of the double bags which contain the concentrated ore must represent scope for the saving of a large sum of money when a year's operations are considered.



General View: Smelting Works and Railway Siding.

Commencement of Smelting Operations.

The company has been fully alive all along to these considerations, but Rome was not built in a day, and, having regard to the fact that Messina is still in its infancy, and that the prosecution of a sound development policy and the establishment of railway connection have so far been paramount considerations, the management can certainly not be accused of having delayed the inauguration of smelting operations for too long a period. In 1908 Mr. Frecheville visited the property, and in the course of his report wrote: "To successfully work a mine situated as Messina at such a great distance from market, smelting the ore to blister copper (about 98 per cent. metal), so as to be able to deal with the lower grade ores, and reduce the transport charges on the output of the mine to a minimum, is a necessity, but without a railway to Pietersburg smelting is out of the question on account of the cost of transport to the mine of the coke and coal required for the furnaces." With the railway fast approaching the property, steps were taken last year to commence smelting operations, and about the middle of this year the erection of two furnaces was completed; men from South Wales, experienced in copper smelting, were engaged, and operations commenced.

Ores Carefully Tested.

It may here be remarked that careful laboratory experiments had been carried out for some time on the Messina ores, by metallurgical experts, both in this country and in England, for the purpose of obtaining a definite knowledge of the most economical method of treatment, as well as the probable smelting costs. Samples of the ore were tested by Huntington, Heberlein & Co., Ltd., of Leadenhall Street, London, E.C., in 1909, and in the course of their report they stated: "Your ore presents no difficulties in its treatment, and could, if necessary, be smelted without the addition of any fluxes. A somewhat easier fusion, however, would be obtained by the addition of 9 per cent. limestone as a flux." In a later report, Messrs. Huntington, Heberlein & Co. wrote: "From the information given us in the report of Mr. Calderwood, we are of opinion it would be advisable to reduce your ore in a reverberatory furnace. Without doubt blast furnace work would be simpler, but the ore would probably require a preliminary roasting, especially with the high sulphur content to be expected in the future."

The Smelting Scheme.

By smelting, the company turns to profitable account the large stock of accumulated middlings and also handles the lower grade carbonate and sulphide ores, which are not so susceptible of mechanical concentration as the more massive sulphides. The character of the ores to be treated, the nature of available fuel and fluxes, it will be seen from the above, have been carefully considered in preparing the design and size of the most suitable furnace. In this respect, fine ores, concentrate and middling had to be treated, and it was considered advisable to erect furnaces of reverberatory type, such as are generally used in Wales for smelting copper ores. Two furnaces have been erected, each having a hearth 23 feet long by 11½ feet wide, with both furnace flues leading to a 70 feet high chimney, lined with firebrick. The furnaces are located close to the Messina railway siding, and are well situated in regard to handling products from the concentration plant. The fire boxes have been arranged for burning coal fuel. The slag is drawn off into sand baths, and the matte containing the copper is tapped into iron moulds. The ironwork for the construction of these furnaces has been supplied by Messrs. Fraser & Chalmers, Ltd., and the firebricks, which comprise the bulk of the furnace material, have been obtained from local makers (The Fireclay Company), and have been found quite suitable for this class of work. Special silica firebricks have been imported from Wales for a start, although it is expected that a suitable quality of brick will yet be made in this country. The capacity of each furnace is about 20 tons of ore per 24 hours, for which the fuel consumption will be from seven to eight tons of small coal. Fuel from the Messina Company's coal mine at Lilliput, about 25 miles south on the new railway line, has been found quite suitable, and the necessary limestone, which is mixed with the ore for fluxing purposes, is found in the neighbourhood of the mine. It has been found, too, that the ashes of the firewood consumed in the boilers contain a high percentage of lime and provide a most effective flux. This is now being largely used. The first furnace was started up with a charge of middling, mixed with some roasted copper pyrites, containing about 15 per cent. copper and about 5 per cent. lime added. This charge was successfully reduced and produced a matte containing 65 per cent. copper, with 1½ per cent. copper in the slag. Since the initial charge was put through, the composition of the charge has been varied as regards copper content, lime, method of firing, etc., with highly satisfactory results, indicating that the Messina ores can be reduced by this method of smelting on a practical scale to give an average grade of 50 per cent. copper matte, and on the lines carried out by laboratory experiments. Latterly a matte of over 70 per cent. has been obtained. It is expected that the two furnaces will produce about 150 tons of copper matte per month, which at present will be shipped with the mill concentrates. Additions to the smelting plant are already contemplated, and a Merton roasting furnace and two additional reverberatory furnaces will be erected in the near future. The treatment of the matte is also under consideration, and with the addition of a refining furnace, blister copper will ultimately be produced and shipped as ingots containing 96 per cent. copper. This, of course, will be the ultimate metallurgical policy of the company. The output from these furnaces for the month of October was as follows: 176 tons of middling and calcined ore were smelted, yielding 55 tons of matte having an average assay value of 56·27 per cent. copper. Matte containing as high as 76 per cent. copper, has been produced. Both furnaces were working about 20 days.

Electrical Plant.

All the new surface machinery is electrically driven from a central power house, containing one 100 k.w. and two 250 k.w. steam driven electric generating sets. Messrs. Hubert Davies & Co. have supplied two 250 k.w. sets, each comprising a 400 h.p. Browett, Lindley & Co. vertical compound steam engine directly coupled to a Westinghouse three-phase alternator, and one 100 k.w. set, comprising an Allen vertical compound engine directly coupled to a Westinghouse generator. All the generators are for three-phase supply at 550 volts, 50 cycles per second. The main switchboard was designed and supplied by Messrs. Hubert Davies & Co., and manufactured by Messrs. Eckstein, Heap & Co., Ltd., and it comprises three generator panels, with the usual provision for synchronising and running in parallel all the generators, and six feeder panels for controlling various circuits on the mine. The switches are of the automatic oil break type, and the panels carry the usual instruments and apparatus to give full control of the plant. A total output meter board is being added, and a separate panel is erected for controlling the general lighting of the property. Behind this main switchboard three 20 k.v.a. single-phase "Berry" transformers are installed for providing lighting current for the whole of the mine. These transformers are fed at the generator pressure of 550 volts per phase, and they transform down to 230-250 volts for lighting. A fourth transformer is being added to stand as a spare for either of the other transformers, should a breakdown accidentally occur.

Messina: Zand River Pumping Station.

Water Supply.

The water supply for the property is obtained from the Sand River at a point rather over four miles from the mine. Whilst in the dry season very little water is visible in this river, there appears to be a constant supply below the bed of the river, and this is drained into a steel lined sump at the pumping station, so that water is always available during the driest part of the year. In the rainy season there is, of course, an unlimited supply of water available, and the level in sump is considerably raised. The difference in level between water at Sand River and in the reservoir at mine is about 425 feet, and the water is carried to the mine through steel piping, having an internal diameter of 7 inches.

Pumping Plant.

The pumping plant consists of two Escher Wyss & Co. turbo pumping sets, each capable of delivering 150 imperial gallons of water per minute against a manometric head of 590 feet maximum, which is approximately the actual total head to be pumped against when both pumping sets are operating together at full duty. The water friction in pipe line is considerable, hence the large difference between static and manometric heads. When one pumping set only is operating the pipe friction loss is considerably reduced, and the total manometric head is only about 485 feet, and to meet this operating condition each pump is arranged so that one stage runner can be removed and a dummy piece inserted with very little trouble. These turbine pumps are each of the five-stage type and run at about 2,900 r.p.m. They each require about 40 b.h.p. when operating under maximum load conditions. Each pump is direct coupled to a three-phase motor of the squirrel cage type, wound for 2,000 volts, 50 cycles, at about 2,900 r.p.m., and to provide a margin of power they are constructed for 50 b.h.p. each. Messrs. Eckstein, Heap & Co. switch panels are installed with auto-transformer starters, and one 1 k.v.a. "Berry" transformer is provided for lighting purposes at pumping plant.

Transmission Line.

The transmission line from the mine to the pumping station consists of bare copper conductors carried on steel tubular poles and cross arms, and protection against lightning and surges is provided by horn arresters and water leak arrangements, whilst steel guard wires are carried over the whole length of the transmission line as an extra protection and earthing connections from this and the poles are made at frequent intervals. At the mine end and close to the generating station a transformer house is erected, in which are installed three single-phase oil insulated "Berry" transformers, having a total capacity of 110 k.v.a., whilst a fourth transformer is being added as a stand-by. These transformers step-up the three-phase current from 550 to 2,200 volts, which is the pressure supplied to the transmission line at mine end. In the transformer house the necessary switchgear is erected for the connections to the transmission line.

Telephones.

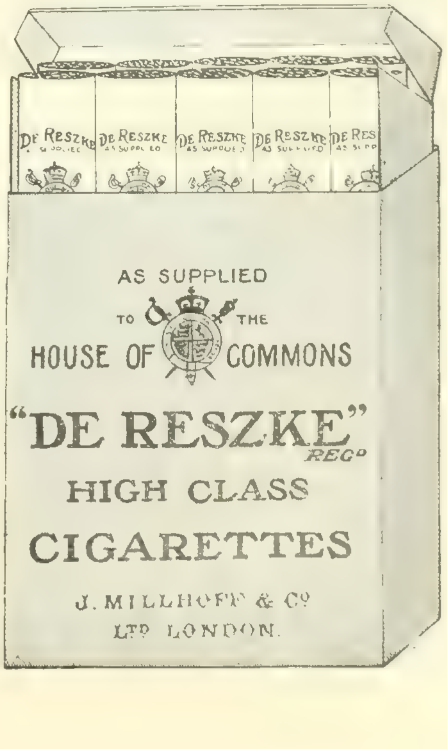
Telephone communication is installed between mine and pumping station, so that the man in charge of the pumping station can be communicated with as may be necessary. The whole of this pumping plant and electrical transmission has been supplied by Messrs. Hubert Davies & Co., and arranged under the direction of the Consulting Engineer, Mr. J. M. Calderwood, whilst the erection of the transmission line and the laying of the pipe line was carried out under contract by Mr. J. M. Westwood.

Ferreira Deep.

The report for the three months ended the 30th September of the Ferreira Deep embraces the financial position of the company as at the 30th September as reflected in the interim balance sheet, working expenditure and revenue account for the quarter, and appropriation account (subject to audit), also particulars of the quarter's development, reduction operations, etc. The interim (abridged) balance sheet on the credit side shows sundry assets: Shares, stores, livestock, furniture, sundry debtors and payments in advance, etc., £46,164, and cash at bankers and value of gold in transit, £586,882. The liabilities are: Sundry creditors on account of loans, dividends, stores, wages, Government tax, etc., £363,074; and the balance brought from appropriation account is £257,573. Working revenue and expenditure account received from gold realised £311,188, or 40s. per ton milled. Working expenditure absorbed £153,382, or 19s. 9d. per ton, which left a working profit of £157,806, or 20s. 3d. per ton. A profit of £755 from treatment of accumulated slimes was made and net sundry revenue brought in £4,045. There is a charge for strike expenditure against this working profit of £3,559, and under the Miners' Phthisis Act Fund of £2,965, which left £156,862 carried to appropriation account. The balance of working expenditure and revenue account brought forward from the 30th of September, 1912, was £125,105, and for the last twelve months ended the 30th of September £687,206, and forfeited dividends, £15, making a total of £812,326. The charges against this sum are: Amalgamation expenses, £1,632; Government tax (estimated) for twelve months, £63,121; interim dividend, £490,000, and the balance, £257,573, is carried to the balance sheet as stated above. The credit balance of appropriation account is not wholly available for distribution. The amount of capital expenditure for the twelve months ended the 30th of September (£5,481) has not yet been appropriated. The amount to be transferred from appropriation account will not be determined till the end of the financial year, and after it has been decided what dividend is to be declared. On development work the number of feet driven, sunk and risen, exclusive of stopes, was 2,670. The reef disclosures were as follows:—Main Reef: Distance exposed, 44 feet; width, 68 inches; assay value, 12s. 8d. Main Reef Leader: Distance exposed, 632 feet; width, 36 inches; assay value, 71s. 5d. South Reef: Distance exposed, 1,199 feet; width, 20 inches; assay value, 80s. The tonnage crushed was 155,640 tons, the value of ore before crushing (reflected by mill yield and value of pulp) was 40s. 11d. The total yield was 73,998 ozs. fine gold, and the total yield per ton was 40s. No. 1 incline shaft was sunk 134 feet and has been temporarily stopped to allow of the cutting of the 14th level station. The sinking of No. 2 shaft has been restarted; good progress has been made in the crosscuts on the 12th level, which will develop the claims south-east of the Grahamstown dyke. The footage in the 12th level main drive west from No. 1 shaft has also been satisfactory. The results of development work continue good, the values of both reefs in the lowest levels in No. 1 shaft area, which were previously poor, have now improved. For the six months ended the 30th of September, 324,675 tons of ore were developed, having an average value of 9·5 dwts., or 39s. 11d. per ton. The yield is 2s. 10d. per ton milled lower than that for the quarter ended the 30th of June; this is due to the fact that owing to insufficient labour, a smaller quantity of rich ore from the deep shafts was transported on surface to the outcrop mill; while the grade of the rock obtained from the Ferreira section, where the "block" ground is almost exhausted, was lower. The mine continues to suffer from a serious shortage of labour, and at the 30th of September had 3,119 natives against its complement of 4,595. As a result, the tonnage milled was 13,420 tons less, and profits from the treatment of current ore showed a decrease of £37,428. Working costs per ton were the same as for the previous quarter. The expenditure on capital account amounted to £1,790. It is estimated that a sum of £6,370 will be required to complete the work authorised.

Otavi Mines and Railway.

The report for the first half of the financial year 1913-14 (April-September), states:—Mining.—Shipped during the second quarter 1913-14, about 14,530 tons of ore and about 267 tons of copper matte. The figures for the corresponding period in the preceding year were 11,660 tons of ore, 205 tons of copper matte and 175 tons of metallic lead. Shipments during the first half year 1913-14 amounted altogether to 25,560 tons of ore, 507 tons of copper matte and 45 tons of metallic lead. The figures for the corresponding period in the preceding year amounted to 21,600 tons of ore, 255 tons of copper matte and 215 tons of metallic lead. The work carried on during the last few months on the fifth level (130 metres) for the investigation of the ore body is practically finished. This resulted in the opening up of further ore reserves of similar good quality to those in the upper levels. The further sinking of the main shaft from the fifth to the sixth level will be started towards the end of the month. Railway receipts during the second quarter 1913-14 amounted to about M.11,265,000, and working expenses to about M.400,000. The figures for the corresponding period in the preceding year were M.1,307,800 and M.468,500. Railway receipts during the first half year 1913-14 amounted altogether to about M.2,497,000 and working expenses to about M.792,000. The figures for the corresponding period in the preceding year were M.2,342,000 and M 927.400.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AS SUPPLIED TO THE HOUSE OF COMMONS
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PROGRESS OF "T.C.L." MINES.

Tin and "Outside" Gold Properties—Promising Prospecting Results—Swaziland Alluvial—Marico Zinc Mines.

THE directors of the Transvaal Consolidated Land and Exploration Company, in their report for the period July 1 to September 30, state that the surface rights of three farms have been sold during the quarter at satisfactory prices, making a total of fourteen farms and portions of farms sold during the period January 1 to September 30, 1913. Rights to minerals have in all cases been reserved. One-fourth of the farm Lorraine No. 183, district Zoutpansberg, has been purchased, making the company's holding seven-eighths of the whole farm. Erf No. 374, Arcadia, Pretoria, and stand No. 321, Fordsburg, Johannesburg, have been sold. Loans amounting to £1,758 have been repaid in full. Current mortgages have been reduced by £6,347 2s. 10d. New loans amounting to £2,591 have been made. The mortgage bonds and other advances account has also been increased by the sum of £3,628, representing balances due on properties sold during the quarter transferred from property account, such balance bearing interest, being secured by the properties themselves, and being reducible by periodical instalments in terms of the deeds of sale. Active enquiry for farms for lease and purchase continues, and a further considerable area of the company's land has been leased or sold for bona-fide farming purposes. Increasing attention in this respect is being paid to the northern districts.

MINING AND PROSPECTING.

Witfontein No. 371, district Waterberg: 327 feet of development work have been done during the quarter, and 540 tons of tin ore raised to the surface, giving altogether 1,600 tons in dumps, and 400 tons broken in mine, whilst the estimated ore developed in the mine is 3,000 tons, making a total of 5,000 tons of an average value of 2 per cent. of 70 per cent. concentrates. The irregular ore body following the main fissure is now being stoped. Mutue Fides No. 1844, district Waterberg: The total amount of development footage to September 30 is 530 feet. It is estimated that there are 730 tons of tin ore at grass averaging 7·34 per cent. of 70 per cent. concentrates, and 700 tons of tin ore developed in the mine averaging 6 per cent. of 70 per cent. concentrates. This prospect continues to look promising, and arrangements have been made for boring for water. If this is successful, a small reduction plant will be erected here.

Groenfontein Tin Mines: The total footage for the quarter has been 993 feet, 270 feet of which were profitable. Five stamps ran 69·6 days, crushing 2,169 tons of 2,000 lbs., and 954 tons of accumulated slimes were re-treated. Concentrates produced 111·04 tons (70 per cent. metallic tin); alluvial concentrates shipped, 5·89 tons (70 per cent. metallic tin), making a total for the quarter of 116·93 tons of 70 per cent. concentrates. Hydraulicing operations exposed the outcrops of several ore bodies in June similar in character to those in No. 19 and No. 30 workings. The face area of these ore bodies exposed at September 30 was 26 square feet, averaging 30 per cent. tin. Development in the neighbourhood of No. 1 White Quartz has exposed bodies of tin-impregnated granite. Exploratory work is being carried out in connection with the alluvial deposit in the Zaaiplaats Valley to determine the feasibility or otherwise of working the wash separately without removing the deep overburden. As a result of the ore exposures referred to above, the outlook for the immediate future is better than it has been for some considerable time. The loss on working for the first half-year, referred to in the chairman's speech at the annual meeting, has now been converted into a small profit, which will be increased by the end of the year. Dientje No. 552, district Lydenburg: A prospector is now carrying out some prospecting work with a view to deciding whether it is worth the company's while to apply for mynpachts on this farm, which the Government has intimated its intention to proclaim.. Montrose Prospect, Barberton district: A large tonnage of oxidised ore, averaging about 9 dwts. per ton, has been opened up here by an adit 522 feet long, but winzes below this level have disclosed ore of a refractory nature. On reaching the second level, crosscuts will be made into this wide ore body to obtain average samples for extraction tests.

TIN PROPERTIES.

Zaaiplaats Lease: 127 feet of development footage have been done during the quarter, and 374 tons mined. The total amount of sorted ore reserves at grass at September 30 was 176 tons of an estimated value of 8 per cent. of 70 per cent. concentrates. Work has been confined to driving on the strike of the seam 120 feet to the dip of No. 1 adit as a preliminary to stoping out the ore between these two workings, which, though patchy, will probably be stoped profitably. Rietfontein (T.C.L.), Limited: 1,580 feet of development footage have been done during the quarter, 3,278 tons mined, 3,188 tons milled. Two Nissen stamps ran 68·15 days with a duty of 23·38 tons per stamp per day. Tube mill ran 69·62 days. 1,268·498 fine ounces of gold were recovered, equal to 7·958 dwts. per ton, showing a profit of £1,144 (including £736 derived from by-products). Considerable difficulties are being met with in the matter of gold recovery, but investigations are still being made to endeavour to improve the metallurgical treatment of this ore. Development work in the mine, on a much more extensive scale than hitherto, shows satisfactory values. Fairview (T.C.L.), Limited: 484 feet of development footage have been done during the quarter, 4,480 tons mined, 4,490 tons milled, 4,210 tons treated. Two Nissen stamps ran 74·7 days, with a duty of 30·2 tons per stamp per day. Tube mill ran 75 days. 1,489·336 fine ounces of gold were recovered, equal to 6.634 dwts. per ton, showing a profit of £821. The additions to the cyanide plant mentioned in the annual report were completed in July, and came into use during August. The use of this plant involved the addition of three zinc boxes, with the result that during August and September a large quantity of gold was absorbed in conditioning these boxes, so that a very considerable amount of recoverable gold was still in the plant at the end of September. Development on a more extensive scale has been commenced, and the second level from D shaft now shows from 25 to 34 dwts. over 36 inches at from 50 to 60 feet from the shaft. Swaziland Tin, Limited: 79·192 tons of concentrates, averaging 70·941 per cent. metallic tin, have been produced during the quarter, yielding an estimated profit of £4,154, as against a profit of £2,839 for the corresponding dry period of last year, or an increase of 46 per cent. The electric gravel pumps were ready for work in July last, but the water supply was only sufficient to enable one pump to run efficiently, whilst numerous difficulties incidental to the starting up of a plant entirely new to this country have naturally had to be dealt with. It is anticipated that normal running conditions will be reached at the end of November, when profits should very materially increase. Marico Zinc Mines: Tenders have been received for the installation of concentrating machinery, but a decision has not yet been taken on the matter, pending the result of boring operations for water. In the meantime, all development work has been stopped, but prospecting is being actively prosecuted on other promising indications in the neighbourhood.

Pilgrims Creek G.M. Co.

LIQUIDATOR'S REPORT.

The following report has been issued by the provisional liquidator, Mr. J. H. Rainier (of Messrs. Nourse Rainier, Ltd., of Johannesburg), in the liquidation of the above company:—"This company was registered in the Orange Free State on the 14th November, 1911, with a working capital of £5,000, to take over and work 136 gold claims in the Pilgrims Rest district. Twelve additional claims have since been acquired. The nominal capital was £25,000, fully subscribed; £20,000 being issued in fully paid shares as vendors' consideration, and in addition the vendor received £500 in cash. The £5,000 working capital was augmented in March, 1913, by the creation of 5,000 preferent shares of £1 each, of which 4,450 shares have been issued. An amount of £526 10s. is still outstanding on 585 shares applied for. The funds of the company have been expended as follows:—Amount discharged: Salaries and wages, £4,775 6s. 11d.; plant, buildings and works, £3,141 11s. 1d.; mining operations and general charges on the property and at Johannesburg, £2,963 8s. 7d.; total, £10,880 6s. 7d. Amount due at date of winding up order: Salaries and wages, £750 3s. 4d.; mining operations, etc., £3,436 10s. 8d.; total, £4,186 14s. The return on the above expenditure was £1,911 16s. 4d. from gold recovered. It is evident, therefore, that the company's operations have been conducted on liberal lines in the anticipation of results which have not materialised. The occurrence of quantities of water in the workings has been a serious drawback. The immediate cause of the failure of this company may be ascribed to insufficient working capital. The company's assets, valued in the books at £7,929, have now been written down at £1,500. If given sufficient time, these may realise better prices by private treaty."

The report on operations at the New Heriot for the three months ended the 30th of September shows that [illegible] feet of driving and sinking was accomplished, and that [illegible] tons of ore were crushed and treated. The revenue from gold obtained was £[illegible]773, or 56s. 3·447d per ton milled. Working expenses absorbed £[illegible], or 22s. 3·155d. per ton, which left a profit on working of £2[illegible] or [illegible] 0·321d. per ton

Room at the Top.

For those holding Government Certificates in Mining and Engineering. Private Individual Tuition and Correspondence Lessons for all Branches. Miners now need no Shift-bossing experience to sit for Mine Captain's Examination.—E. J. MOYNIHAN, Consulting Engineer, Cuthbert's Buildings, Pritchard Street, P.O. Box 2061.

GEOLOGICAL SURVEY: DIRECTOR'S REPORT.

Summary and Distribution of Field-work—Brief Account of the Year's Investigations. —West Rand Geology—Rustenburg, Marico and Middelburg Mapping—The Pongola Gold and Coal Fields.

THE Director of the Union Geological Survey, Mr. H. Kynaston, in his annual report, says:—

In the Transvaal and Natal the field-work was distributed during the year chiefly in continuation of the areas surveyed during 1911, as will be seen by a glance at the Index Map attached to the report. The actual area surveyed has been somewhat less than that completed during 1911, owing to the detailed nature of the work on the Witwatersrand and in Natal, but it will be seen that as a consequence the number of miles of geological boundary lines traced upon the field-maps has been considerably greater. Good progress has been made on the Witwatersrand, where the work during the year has been concentrated by Dr. Mellor mainly in the western portion of that area, and careful and accurate mapping has thrown much fresh light upon a number of important problems. Visits were also made to many of the mines for the study of the behaviour of the Main Reef series beneath the surface and for the collection of various necessary data. In this connection mention should also be made of the excellent services rendered, both in the field and in the office, by Mr. A. K. Parrott, who has been employed as assistant to Dr. Mellor, during the progress of the work on the Witwatersrand. In the western Transvaal the mapping of the northern Rustenburg and Marico districts was continued by the Director up to the border of the Bechuanaland Protectorate. During the latter part of the field-season the Director revisited the Rooiberg, Leeuwpoort, and Century Tin Mines in connection with the writing of the explanation accompanying the Nylstroom Sheet. In the eastern Transvaal Mr. A. L. Hall, after his return from vacation leave, was employed in the area both north and south of the Delagoa Bay Railway, between Middelburg and Belfast, joining up on the west with the area completed by Dr. Mellor in 1906, and on the east with the area surveyed by Dr. Humphrey in the same year. In the south-east corner of the Province Dr. Humphrey mapped a portion of the area lying between the Swaziland border and the Pongola River in connection with his work in Natal. The mapping of northern Natal was continued by Dr. Humphrey, the area mapped during the year being situated mainly north of the town of Vryheid and between that place and the junction of the Pivaans and Pongola Rivers. In the Cape Province Dr. Rogers spent six months in examining and mapping the central portion of the copper mining district of Namaqualand, and the mines in it, and in this connection acknowledgment may here be made of the facilities given to the work by the Cape and Namaqualand Copper Companies. Dr. Du Toit was employed for six months on a topographical and geological survey of Pondoland and East Griqualand, completing Sheets Nos. 27 and 28 of the Geological Map of the Cape Province, and joining up with some of the work formerly done by Mr. W. Anderson in the southern part of Natal. In this area topographical work was necessary, as the only data available for a geological survey were the beacons of the secondary triangulation, of which the coordinates were supplied to Dr. Du Toit by the Director of the Secondary Triangulation. The Index Map of the Cape Province attached to the report shows, in addition to the work completed during 1912, the whole area surveyed under the Geological Commission since its appointment in 1895 up to the end of 1911.

GENERAL SUMMARY OF THE FIELD-WORK.

(1) *Witwatersrand.*—The area surveyed during 1912 forms an extension westwards of that dealt with during the previous year, and embraces the whole of what is usually understood by the term Western Rand in its widest sense. The number of square miles mapped in detail was approximately 400, which included the tracing of 906 linear miles of geological boundary lines. The area is largely occupied by rocks of the Witwatersrand System, in which the geological and economic interest mainly centres, and lying north and south of these rocks are large tracts of dolomite. In the part of the area mainly occupied by the older rocks the proportion of miles of boundary lines mapped to square miles of area was about 3½ to each square mile. The dolomite country, on the other hand, offers but little detail. It was at first intended to map the boundary lines of the various series only, into which the Witwatersrand system has been divided. In order, however, to deal satisfactorily with some of the highly faulted portions of the district, it was necessary to go into considerable detail, so that ultimately it was found advisable to map the whole western area on similar lines to those followed in dealing with the Central Rand. The West Rand offers an exceptional number of geological problems, concerning which opinion has long been divided, and in most cases the detailed mapping afforded a satisfactory explanation of the debatable points. Among the more important results of the work, it was found possible to locate with considerable certainty a number of important lines of fault, which are among the most significant structural features of the West Rand, and which have an important bearing upon the possible extensions of the Main Reef series in that area. In this connection a fault, which has been designated the "Roodepoort Fault," is perhaps one of the most important. Much of the prospecting, which has been undertaken to the south-west of Roodepoort, has been carried on in the immediate neighbourhood of this fault, which, by bringing the shales and sandstones of the Jeppestown series into contact with the quartzites of the Upper Witwatersrand system, simulates the natural junction of these rocks, which normally lies a short distance below the Main Reef horizon. The junction, however, in this case is not a normal, but a faulted one. The course of such well-known "markers" as the Government Reef and the West Rand shales was followed through the Western Rand, and their connection with the corresponding horizons in the Central Rand established. The structure of the country about Doornkop, to the south-west of Roodepoort, which has always been very obscure, was satisfactorily worked out and connected with the geology of the rest of the area. The detailed mapping further allowed of the construction of a section showing the normal succession of strata of the West Rand, which was found to agree closely in character and in the sequence of its members with that of the Central Rand. It was found that, while the prevailing idea that the Witwatersrand system increased considerably in thickness on the West Rand was correct as far as the lower half of the lower division is concerned, the upper half showed little, if any, increase of this nature, while the upper division of the system is decidedly thinner than on the Central Rand. In this connection one of the most marked features is the almost complete dying out of the Elsburg beds on the Western Rand. Much information regarding the Upper Witwatersrand system was also collected, which will be best deal with when it is possible to compare it with that obtained from other portions of the district as the work progresses, and so to deal at one time with the Upper Witwatersrand system of the whole of the Rand.

(2) *Rustenburg and Marico Districts.*—In the northern portion of these districts the Director completed an area of 1,020 square miles, including 674 miles of geological boundary lines, situated mainly between the Dwarsberg range and the border of the Bechuanaland Protectorate. This area is the westerly continuation of that mapped in 1911, and joins up on the south with that completed by Dr. Humphrey during 1910. Geologically this part of the country is occupied by the lower portion of the Pretoria series up to the Middle or Daspoort quartzite, the Ventersdorp system, the older granite, and a variety of intrusive igneous rocks. The Ventersdorp system differs somewhat here from its development further east, as described in the annual report for 1911, and shows a much greater proportion of volcanic rocks, the sedimentary facies being mainly represented by conglomerates. It consists essentially of alternations of basic and acid lavas, with occasional intercalations of sedimentary beds; but owing to the extent and depth of superficial deposits in this area, the complete succession and local structure of the system have been obscured. The most interesting feature of the geology is the occurrence of groups of intrusive igneous rocks in the Marico Valley and along the Protectorate border, which range from acid granites to ultrabasic types, and show many points of resemblance to the igneous complex of the bushveld. Some of these rocks can be shown to be of later age than the Ventersdorp volcanic rocks, but their exact age must be left doubtful for the present. They have, however, in the meanwhile been provisionally referred on the map to the bushveld igneous complex. The upper horizons of the dolomite carry copper-ores in the western part of the area, and these have been extensively worked by the natives in former times.

(3) *Middelburg District.*—During the latter part of the field-season Mr. A. L. Hall mapped 946 square miles in the south-eastern portion of the Middelburg district, including also a narrow strip of the Lydenburg district. The completion of this area joins up the work of Dr. Mellor in the neighbourhood of Middelburg, mapped in 1906, with that surveyed north and south of Belfast by Dr. Humphrey. The mapping was carried, on the south, up to the southern margin of the Belfast sheet, which, it is expected, will be completed during the present year. The progress of the work, however, in this part of the Province has now completed our knowledge of the geological formations of a continuous belt of country, stretching almost right across the central Transvaal for about 330 miles, from Mafeking in the extreme west through Pretoria and Middelburg as far as Nelspruit on the Delagoa Bay Railway on the east. The area mapped during 1912 is of no great enocomic importance, except perhaps as regards coal, which is worked only in one locality, namely, Zwartkoppies, north of Belfast. Geologically the upper horizons of the Transvaal system, striking in a general north and south direction, are exposed along the eastern margin of the area, near Belfast, while the volcanic series of the lower Waterberg system occupies a considerable area on the west. Between these two appears the norite and granite of the bushveld complex. The unconformable overlap of the Karroo system, occupying the higher portion of the area, conceals the extension of these older systems towards the south. An interesting series of contemporaneous igneous rocks was mapped by Mr. Hall immediately above the highest quartzite of the Pretoria series, and lying between that series and the norite. This is the southerly continuation of the belt of volcanic rocks mapped in the area further north during 1910, and closely resembles the volcanic beds, known as the Ongeluk series, associated with the Griqua town beds in the north-western portion of the Cape Province.

(4) *Northern Natal and Piet Retief District.*—In this part of the country Dr. W. A. Humphrey completed an area of approximately 1,200 square miles, the somewhat detailed nature of the work involving the tracing of 1,739 miles of geological boundary lines. This included portions of the Utrecht and Vryheid districts of Natal and of the Piet Retief district in the south-eastern Transvaal, practically the whole area being embraced by the basin of the Pongola River, and

for the most part of a broken and deeply dissected character. Apart from the outcrops of the older granite and associated schists, the most interesting features of the geology centre in a thick series of sedimentary rocks, which have been provisionally termed the *Pongola series,* and which are divided into an upper and lower division, each of which shows distinctive characters. The two divisions are usually separated from one another by a fault plane, which obscures their relations. The lower Pongola series shows an extensive development of basic amygdaloidal volcanic rocks. These are associated with four distinct sedimentary zones, the highest and lowest of which consist of massive quartzites, while the two middle consist of thin beds of quartzite with phyllites. The whole series, with the exception of parts of the amygdaloid, shows considerable shearing parallel to the strike. The upper Pongola series is characterized by considerably less metamorphism than the lower division, and consists of a succession of massive white and yellow quartzites interbedded with shales and occasional conglomerates. The shales are sometimes well banded and often highly ferruginous and contain one contorted band. The conglomerates vary from lenticular beds in the quartzites to well-defined persistent bands. Two assays out of three showed the presence of gold, but in very small quantity. The upper Pongola series shows a close resemblance petrologically to the Witwatersrand system of the southern Transvaal, and there is also a general resemblance in the sequence of the constituent strata. The amygdaloidal rocks of the lower Pongola series, on the other hand, recall the volcanic rocks of the Ventersdorp system, although the accompanying sediments are rather in the condition that one usually associates with the rocks of the Swaziland system. The characteristic banded ironstones, however, of the latter have not so far been observed in the lower Pongola series. The gold occurrences in the Pongola series are usually found in association with quartz reefs and veins, and all the principal occurrences are associated with a well-defined zone of faulting. The Klipwal Pongola and the Wonder Mine have been practically the only producers. The former is still being worked, but the latter has been closed down. Coal is worked at Hlobane, where four seams have been opened up, ranging in thickness from one to six feet, and including some bituminous and excellent steam coals. Three seams have so far been found at Veelsgeluk. In addition to the mapping completed in northern Natal, Dr. Humphrey also undertook a short traverse in the Drakensberg range, in order to get an acquaintance with the main features of the general succession of the Karroo system.

(5) *Cape Province: Namaqualand.*—In the copper mining district of Namaqualand, in the neighbourhood of O'okiep, Dr. A. W. Rogers mapped an area of 1,170 square miles and traced 350 miles of geological boundary lines. The country mapped consists of gneiss, overlain on the west by a strip of beds belonging to the Nama system and bent into a shallow syncline, of which the eastern limb is in part replaced by a fault-plane. The chief characteristic of the gneiss in this area is the abundance of sillimanite, often in bands consisting of sillimanite-cordierite gneiss or schist. Although the mineral composition of certain bands in the gneiss shows that they probably represent highly altered sediments, no bodies of recognizable sedimentary rocks older than the gneiss were found. The copper-ores of this district are found in small intrusions, which differ considerably from one another, even in a single group of outcrops. They range from purely plagioclase rocks, resembling anorthosites, to rocks consisting mainly of hypersthene, while intermediate types are norites and mica-diorites. All these varieties, for which the general term of "ore-bearer" is employed, have, however, features in common and are evidently the product of the differentiation of one magma. The copper-ores, bornite and chalcopyrite, appear to be the original constituents of these intrusive rocks, but have been concentrated locally in some of the intrusions. This concentration appears to be independent both of depth from the present surface and of the contact between the ore-bearer and the country rock. It is also significant that it has taken place chiefly in the more basic varieties of the intrusive rocks, but those consisting entirely of plagioclase have not been found to carry sufficient ore to be worth mining. The intrusions of the "ore-bearer" are younger than the gneiss, but probably older than the Nama formation. The Nama formation in this area consists of the Nieuwerust series at the base with the Malmesbury series resting upon it.

Pondoland and East Griqualand.—In this area Dr. A. L. Du Toit surveyed 3,300 square miles of country during six months in the field, and traced 6,700 miles of geological boundary lines. The unusually high proportion of boundary lines to each square mile of area is due to the extraordinary development in this area of sheets and dykes of dolerite invading the strata of the Karroo system. The full succession of the Karroo system is here developed from the base of the dwyka, resting unconformably on the Table Mountain series, to the volcanic beds of the Drakensberg. The boundary lines between the seven sub-divisions were followed north-eastwards, and it is hoped that by continuing them in Natal the stratigraphical position of the coal-measures there will eventually be definitely ascertained. The Table Mountain series, identical in character with the well-known rocks of that group in the south of the Cape Province, covers a wide area along the coast. The dwyka tillite, fully 1,000 feet in thickness, rests upon it horizontally, but the whole Karroo succession has a general low north-westerly dip, *i.e.*, is inclined inland. The tilted belt near the coast, described in the last annual report of the Geological Commission, was found to extend from the Umtata River northwards to Lusikisiki, the south-easterly dips bringing the Ecca and Beaufort series down to the shore both north and south of St. Johns. The tilted Karroo beds, with the dolerite intruded in them, abut against horizontal Table Mountain sandstone along a fault crossing the Embotyi River, and along this fault the presumably cretaceous conglomerates, called the Embotyi beds, are also thrown down to the south. The "gates" of St. Johns are a "horst" of Table Mountain sandstone, surrounded by bent and broken Karroo beds. The thickness of the Karroo system in this area, exclusive of the volcanic group at the top of the Stormberg series, is 14,400 feet. The Karroo beds are penetrated by a maze of sheets and dykes of dolerite. The Tabankulu and Tonti mountains are made of gabbro and norite, like the rocks of the Insizwa. At the base of the Tabankulu intrusion there is much picrite, an extreme differentiation product of the basic magma. The Senonian beds near the Umzarba were re-examined, and it appears that there is no fault present on their inland side. There is no need to assume the existence of such a fault, and the beds are considered by Dr. Du Toit almost certainly to lie unconformably on Table Mountain sandstone. Patches of these cretaceous beds were also found near the mouth of the Umtentu.

Harrisdale Diamonds.

A sample of the yellow ground from the shaft in the new mine in the Harrisdale Diamonds property at the forty-foot level has been sent to the head office of the company, and can be seen by anyone interested. This is the mine section reported on by Mr. Jerry Davies.

In the course of a favourable report on the Harrisdale Estate, Mr. J. F. Davies gives some interesting figures as to returns from recent operations. He writes: "I give herewith some actual returns of the values of diamonds found from digging operations, which have been going on recently and are going on at the present time:—

Claims worked out.		Value of Diamonds recovered
H.	10	£1,249
N.	4	410
O.	3	500
H.	1½	256
	18½	£2,415

The size of a claim is 30 feet by 60 feet, and the average depth of alluvial is about 14 inches. There is no overburden. The number of loads per claim, allowing 12 cubic feet to the load in the solid, which is very conservative, is approximately 150. The total claims worked out above number 18½; 18½ × 150 = 2,775 loads treated for a recovery of £2,415 worth of diamonds, equal to a money value of 17s. 3d. per load. This is a very fine record of results, and it shows conclusviely the highly payable, I might almost say rich, character of the alluvial deposits on the estate. The returns are not selected, they represent practically all the digging that is now going on, or that has been done recently. In my opinion, a big success for the company is assured if work is proceeded with carefully and systematically on the lines recommended."

Nigel G.M. Co.

The report of the directors of the Nigel G.M. Company for the quarter ended 30th September states that 39,250 tons of ore were stoped during the quarter with an average value of 8·18 dwts. The ore crushed was 39,300 tons and the total of gold won from all sources was 14,234 ozs. The gross revenue was £60,183; expenditure, £47,783; profit, £12,400. Profit tax to be deducted. The details given of driving and sinking show arrival among poor values here and there, but several excellent strikes of rich ore bodies are reported, values running from about 12 dwts. up to 53 dwts., one of the best being 37·5 dwts. over 12 inches.

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Rhodesian Section.

LATEST MINING NEWS.

The R.N.L.B.: Transfer to Salisbury—Lonely Reef—Selukwe Columbia—The Lomah Company—Centralization in Katanga.

It has been decided to transfer the headquarters of the Rhodesian Native Labour Bureau from Bulawayo to Salisbury, and it is anticipated that as a result of the concentration and centralization to be effected, a saving of £10,000 per annum will result. In a letter to the Press on the subject, Mr. G. Wolfe Murray, the Chairman and Managing Director, writes: "The adoption of the scheme in question will have the result of enabling the Bureau to deliver its recruits in a better physical condition at a very considerable saving in working costs, thereby placing that institution within a much shorter period of time than was originally anticipated, in a healthy financial position, which should enable it to build up a reserve and effect an appreciable reduction or rebate in mine capitation fees. The actual point of concentration decided upon is Salisbury, and immediate steps are being taken to remove the headquarters of the Bureau to that town. Whilst the management of the Bureau much regret the direct loss that will be sustained to the town of Bulawayo through their decision, they feel confident that the citizens of that town are willing to sacrifice their own particular interests for the many benefits that must accrue, through the adoption of the foregoing scheme, to the large army of employers of native labourers throughout the whole of Southern Rhodesia."

* * * *

Since the issue of the June quarterly statement development operations at the Lonely Reef mine have been continued at the 9th and extended to the 10th level. To the end of June, 1912, proof had only been afforded of a length of 166 feet of pay chute at the 9th level. Developments since appear to have added approximately an additional 500 feet, making the total of pay chute exposed about 660 feet, of an average of approximately 31 dwts. over about 40 inches. Cabled advice at the end of last week reported the last 40 feet of driving in the 9th level to the south as in ore narrowed to 13 inches width, of 35 dwts. assay value. Three winzes have been sunk from the 9th level, and further, quite close to the main shaft, an inclined shaft has been carried down from the 9th to the 10th level, and the distance from the incline shaft to the No. 3 winze to the south proves already about 400 feet of pay chute at 10th level. Apparently in one of the winzes and in the main incline driving in the 10th level has been commenced, assay values at south being reported as 44 dwts. over 58 inches, also at the furthest north 34 dwts. over 71 inches, and close to the last showing 53 dwts. over 58 inches. The position as to the levels above the 9th have been reported as under:—

	Pay Chute. Opened up. Feet.	Lode Width. Inches.	Assay Value. Dwts.
6th level	740	39·5	29·35
7th level	864	45·2	36·0
8th level	890	43·9	32·3

With the development of the 10th level there will be three more backs of ore opened up below the 7th level. To the end of 1912 there had been some stoping between the 6th and 7th levels, but not below the 7th.

* * * *

The report of the Selukwe Columbia Gold Mine for the year ended June 30 last states that the tonnage of ore treated has shown a considerable increase this year, being 5,700 tons more than in any previous year. The total cost of mining and reduction, £1 12s. 11d., shows a decrease of 3s. 5d. per ton as against last year's cost, viz., £1 16s. 4d. The net profit was £14,662. The compressor plant having been removed from the Yankee Doodle mine to the Wonderland, Chimborazo, and Danga claims, exploration and development work has been carried on with energy, the primary object being: (1) The opening up of the first level throughout; (2) the opening up of the second level sufficiently to explore pay shoots; (3) sinking four winzes to the third level; (4) sinking shafts on Wonderland and Danga to the third level. Roughly estimated, the expenditure necessary to bring this property to the producing stage during the next 12 or 15 months is £1,500 a month. This is apart from the cost of the erection of an aerial haulage from this part of the property to the existing mill, or the transfer of the mill to the new ground, whichever may be decided upon as the most economical method of dealing with the ore from these blocks.

* * * *

The Lomah (Rhodesian) Exploration Company has been carrying on development work for some months past on the Kambanje mine, in the neighbourhood of the Planet-Arcturus. The new main shaft has reached a depth of 190 feet; and crosscutting for the reef is in progress at the 170 feet level. The shaft is being continued to 270 feet where another level will be opened up. A short crosscut from the west shaft at 50 feet cut the reef, exposing 18 inches of quartz assaying 18·3 dwts. per ton.

* * * *

The *Journal du Congo* reports that an organization is about to be formed for centralizing the business of three of the largest mining companies which are engaged in prospecting work in Katanga—the Bas-Katanga Company, the Belgo-Katanga Company, and the Société Industrielle et Minière. The journal adds that the immediate consequence will be the formation of two large companies, the first one for working some of the diamond pipes of the Kundelungu district and the second one for working the tin deposits of Muika.

Katanga Coal.

The *Journal du Congo* publishes an interesting article on the discovery of coal made in the Lukuga basin. The coal-beds crop out in several places, and the numerous cuttings made have shown the existence of seven seams, varying in thickness from 1 ft. to 6½ ft. The persistence of the seams has been established by several boreholes. The type of coal is semi-bituminous, hard and light. Analyses give 28 to 45 per cent. volatiles, ash 18 to 20 per cent., and 6,500 to 7,000 calories. The coal is adaptable to domestic and industrial purposes.

Ranching in Rhodesia.

The *Evening Standard* publishes the following cable from its Washington correspondent: "The 'Camp Stool' Ranching Company of Rhodesia, with a capital of £1,000,000, has been launched in the West for the purpose of developing the ranching business in Rhodesia. The board will include two of the leading beef magnates of Chicago, and the company are negotiating with Major George P. Ahern, chief forester of the Philippine Islands, and one of the best known agriculturists in the United States, to take charge of their interests in South Africa."

QUARTERLY REPORTS.

General Mining and Finance.

The following details show the results of operations on the mines of the General Mining and Finance Corporation group for the three months ended the 30th of September:—

MEYER AND CHARLTON.

Number of feet driven, risen and sunk, 1,385; footage sampled on reef, 905; average stoping width, 47·32 inches; average assay value over stoping width: Payable, 510 feet, assaying 27·63 dwts.; unpayable, 395 feet, assaying 1·27 dwts. Ore crushed, 42,516 tons; revenue from gold, £101,201; sundry revenue, £12; total revenue, £101.213; working costs, £38,969; working costs per ton, 18s. 3·98d.; working profit, £62,244; profit per ton, 29s. 3·36d.; capital expenditure, £2,053. The working profit for the quarter is £787 less than that for the preceding quarter. The white employees went on strike on the 4th of July, but returned to work on the 8th of July. The milling time lost during the strike period amounted to 4·24 days. The mine has been equipped for electric blasting, which system was initiated on the 12th of August, and subsequently extended to all the levels below the 15th, which are now connected with a switchboard on the surface, from which point the blasting on each level is effected. The installation of the new Pearn pump on the 19th level was completed in July. A new and improved underground water service has been brought into operation. The development footage exceeds the footage driven in the previous quarter by 199 feet. The incline shaft has been sunk a further 127 feet, making a total depth of 3,301 feet, being 147 feet below the 20th level.

ROODEPOORT UNITED MAIN REEF.

Number of feet driven, risen and sunk, 3,478; footage sampled on reef, 1,950; average stoping width, 38·66 inches; average assay value over stoping width: Payable, 1,375 feet, assaying 7·9 dwts.; unpayable, 575 feet, assaying 3·02 dwts. Ore crushed, 67,939 tons; revenue from gold, £67,238; sundry revenue, £345; total revenue, £67,573.; working costs, £63,405; working costs per ton, 18s. 7·99d.; working profit, £4,168; profit per ton, 1s. 2·72d.; capital expenditure, £8,805. On the 4th of July the whole of the white workmen employed on the property ceased work in consequence of the general strike then proceeding on these fields, and returned to their duties on the 8th of July. The disorganisation resulting from the stoppage was felt for some weeks afterwards, and has been followed by an abnormal wastage of native labour, which has seriously hampered the working conditions of the mine. This aspect of the position of affairs is reflected in the decreased tonnage milled and the reduced amount of development work effected.

NEW GOCH.

Number of feet driven, risen and sunk, 1,240; footage sampled on reef, 760; average stoping width, 52 inches; average assay value over stoping width: Payable, 595 feet, assaying 7·23 dwts.; unpayable, 165 feet, assaying 2·62 dwts. Ore crushed, 78,540 tons; revenue from gold, £75,357; sundry revenue, £368; total revenue, £75,725; working costs, £64,908; working costs per ton, 16s. 6·344d.; working profit, £10.187; profit per ton, 2s. 9·053d.; capital expenditure, £2,423. The working profit shows a decrease of £4,299 as compared with the previous quarter This reduction is due chiefly to the effect of the strike among the company's white employees which occurred on the morning of the 4th of July in consequence of the general strike then proceeding along the Reef. Operations were resumed on the men returning to work on the evening of the 7th of July, but the returns for that month were seriously affected by the extraordinary expenditure and temporary disorganisation resulting from the strike.

VAN RYN ESTATE.

Number of feet driven, risen and sunk, 640; footage sampled on reef, 308; average stoping width, 42 inches; average assay value over stoping width: Payable, 233 feet, assaying 7·8 dwts.; unpayable, 75 feet, assaying 2 dwts. Ore crushed, 103,770 tons; revenue from gold, £136,018; sundry revenue, £517; total revenue, £136,535; working costs, £76,074; working costs per ton, 14s. 7·94d.; working profit, £60,461; profit per ton, 11s. 7·84d.; capital expenditure, £2,291. The working profit reflects a decrease of £6,210 in comparison with that for the previous quarter, a reduction which is wholly attributable to the effects of the strike of the company's employees referred to in the preceding quarterly report. It will be observed that the footage cut on development work for the past quarter is very small; this is due to the severe shortage of native labour experienced since the strike, which rendered it advisable to temporarily suspend development and to concentrate all available labour of this description on the maintenance (as far possible) of normal gold production. Since the close of the quarter under review an improvement in the labour position has taken place to a sufficient extent to allow of the gradual resumption of development work.

AURORA WEST UNITED.

Number of feet driven, risen and sunk, 2,260·5; footage sampled on reef, 1,824; average stoping width, 44·14 inches; average assay value over stoping width: Payable, 1,182 feet, assaying 8·79 dwts.; unpayable, 642 feet, assaying 2·08 dwts. Ore crushed, 42,550 tons; revenue from gold, £56,292; sundry revenue, £188; total revenue, £56,480; working costs, £40,949; working costs per ton, 19s. 2·97d.; working profit, £15,532; profit per ton, 7s. 3·6d.; capital expenditure, £1,157. The working profit shows an increase of £701 over that for the previous quarter. On the evening of the 3rd of July practically the whole of the white employees of the company came out on strike in response to the general strike movement then proceeding, but returned to work on the 8th of July The effect is principally reflected in the decreased footage of development carried out during the past quarter.

WEST RAND CONSOLIDATED.

Number of feet driven, risen and sunk, 4,469; footage sampled on reef, 1,608; average stoping width, 43·5 inches; average assay value over stoping width: Payable, 1,108 feet, assaying 9·6 dwts.; unpayable, 500 feet, assaying 1·9 dwts. Ore crushed, 77,200 tons; revenue from gold, £110,754; sundry revenue, £264; total revenue, £111,018; working costs, £87,909; working costs per ton, 22s. 9·29d.; working profit, £23.109; profit per ton, 5s. 11·84d.; capital expenditure, £20,875. The working profit shows a diminution of £8,606 in consequence of the decrease of 17,800 tons milled and £25,198 in revenue, as compared with that for the previous quarter. This is entirely due to the existing shortage of native labour, which is also reflected in the considerably reduced footage of development work accomplished during the past quarter. The underground complement of natives has fallen by nearly one-half since the recent strike. On the morning of the 3rd of July milling operations were suspended by reason of the general strike along the Reef, which affected the company's employees; crushing was, however, resumed on the evening of the 7th of July on the termination of the trouble.

CINDERELLA CONSOLIDATED.

Number of feet driven, risen and sunk, 2,583; footage sampled on reef, 1,775; average stoping width, 39 inches; average assay value over stoping width: Payable, 510 feet, assaying 22 dwts.; unpayable, 1,265 feet, assaying 2·2 dwts.; capital expenditure, £28.958. The fifth level east (connection) drive was advanced 510 feet to a total length of 3,173 feet, leaving a distance of approximately 1,250 feet still to be driven to reach the horizon of the projected incline shaft to be sunk from the new central vertical shaft. On the 22nd of September all work in the Cinderella section, with the exception of the 5th east connection drive, was stopped. At the central shaft, 65 feet were sunk during the quarter, making the total depth of the shaft 2,969 feet. Sinking operations were temporarily suspended in the early part of July, owing to the strike. The shaft has now been dewatered and sinking operations were resumed in the middle of October.

RAND COLLIERIES.

During the quarter the total footage accomplished underground was 176 feet, the whole being at the horizon of the 10th level. In addition, 250 feet of diamond drilling were effected. The north drive was driven on reef to 832 feet, when, owing to a sharp bend in the ground, the reef went into the hanging wall. The 45 feet sampled during the quarter gave an average value of 3·3 dwts. calculated over an assumed stoping width of 36 inches. The south drive was driven throughout in the quartzite hanging wall and therefore exposed no reef. The winze has been sunk throughout on reef; 25 feet sampled averaged 2·1 dwts., calculated over an assumed stoping width of 36 inches. Development work was suspended in the early part of July owing to the general strike, and again towards the end of that month pending the consideration of the question of shutting down the mine. In view of the financial position of the company (the indebtedness to the General Mining and Finance Corporation, Ltd., being approximately £172,000 for advances made) and having regard to the impracticability of obtaining under existing financial conditions the additional working capital required to adequately develop the property, the board of directors decided in August last to close down all operations for the time being and till a more favourable opportunity presents itself for refinancing the company. All underground gear has since been removed from the mine and stored at the surface, and the property is now in the hands of a caretaker.

Bantjes Consolidated Mines.

Revenue, £85,594, or £1 7s. 3d. per ton from 62,890 tons crushed; cost, £75,188, or £1 3s. 11d. per ton; profit, £10,406, or 3s. 4d. per ton; total yield, 20,370 fine ozs.; total yield per ton, 27s. 3d. Number of feet driven, sunk and risen, exclusive of stopes, 4,574 feet. The reef disclosures were as follows:—Leader: Distance exposed, 640 feet; width, 17 inches; assay value, 62s. 7d. South Reef: Distance exposed, 2,395 feet; width, 10 inches; assay value, 105s. The acute shortage of native labour has adversely affected the progress of development work, which was 1,696 feet less than the previous quarter. The reef exposures on both Leader and South Reef are satisfactory. Driving on the lowest levels has had to be stopped temporarily, but the work of making the connections necessary to render the blocks available for stoping has not been curtailed. The scarcity of labour has also compelled the more extensive use of machines for stoping purposes; 26·9 per cent. of the rock mined in September was obtained by this method, as against 8 per cent. in June. The fan erected at the 6th level is now running, and has converted No. 2 central incline shaft into a downcast shaft. The erection of the new hoisting engine at No. 2 shaft was completed, but it has been decided to defer putting it to work until an increased labour supply makes it possible for the mine to supply the necessary tonnage. The working profit has suffered owing to the large reduction in the native force, and was £1,210 lower than the previous quarter. Of its complement of 3,697 natives, only 2,032 were in the service of the company at 30th September, or 1,080 less than on 30th June. In order to obtain the greatest effectiveness from this force, it was decided to send some of the development rock dumped on the surface to the mill; 1,956 tons from this source were treated; this rock, although producing a small profit, has naturally had the effect of lowering the average grade of the ore sent to the mill. The net expenditure on capital account has been £13,258, and it is estimated that a further sum of £891 will be required to complete the work authorised by the board.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Gassing Accidents.

To the Editor, *South African Mining Journal.*

Sir,—I see an account in your paper of four more fatal accidents at the Crown Mines from "gassing." I read that these unfortunate men did not go down the mine, as usual some three hours after the last blasting operations, but twenty-one hours after. These men but add to the long list of those, many hundreds I may say, who have met their death from gassing during the last few years. Surely if such catastrophes can be prevented, it is for the Government and people to see it is done. For some years a Mr. F. W. Bawden has been endeavouring to perfect an explosive. I personally have seen this explosive tested many times, and can vouch for all I say. It has been tested, both theoretically and practically, by the highest authority in South Africa, and in regard to poisonous gasses has been proved to be absolutely harmless. I have myself, not once but dozens of times, been into "dead" ends two minutes after blasting, and after staying in for a considerable time have come out feeling not the slightest ill-effects. As to its efficiency, it does its work in stopes, either machine or hand holes, equally as well as blasting gelatine. In development work, and more especially in "cuts," it is hardly equal, though nearly so, to blasting gelatine. I may add that the latest improvement Mr. Bawden has made in this explosive has not been tested in the Transvaal, but in Rhodesia. Where it has been tested it did its work equally as well as blasting gelatine, though I am fully aware that rock conditions in Rhodesia and the Transvaal are not quite similar. Unfortunately, Mr. Bawden and those interested with him are not wealthy men, and naturally the interests of Modderfontein and other explosives factories are dead up against them; but, sir, surely in the interests of humanity, as I said before, it is up to the Government to give its earnest attention to a matter of such vital importance to the workers of these mines and to help in every possible way, and financially if need be, such an object as will tend to lower the terrible death toll paid by the miners on these and other fields. I may also point out that this explosive can be manufactured at least 20 per cent. cheaper than blasting gelatine, and, further, there is no possibility of its freezing in the coldest weather, nor exuding in warm weather, which are two very serious dangers in the composition of dynamite, and it is certainly as safe to handle and manufacture as anything of an explosive nature can be.—Yours, etc.,

J. B. WOOLLEY.

Johannesburg, Nov. 14.

"Dewar" and "Rathbone" Shields Competitions, 1913.

To the Editor, *South African Mining Journal.*

Sir,—With further reference to my letter dated the 23rd ultimo, I have the honour to inform you that the competitions for the above-named shields, which are at present on view in the windows of Messrs. Chudleigh Bros.' premises, Eloff Street, Johannesburg, and the social function in connection therewith will be held as under: For the "Dewar" Shield: In the Recreation Hall, Railway Headquarter Offices, Noord Street, Johannesburg, at 12.45 p.m. on Saturday, the 29th instant. A grand smoking concert in honour of the teams participating in the "Dewar" and "Rathbone" shields competitions will take place in the Recreation Hall, Railway Headquarter Offices, at 8 p.m. on Saturday, the 29th instant, Mr. Creswell Clark, C.M.G., Assistant General Manager of Railways, having kindly consented to take the chair, and Mr. H. Mitchell, General Manager of the Langlaagte Estate and G.M. Company, having been asked to present the "Dewar" Shield to the winners. The tickets for this concert for other than teams and a few guests will be 2s. each, including refreshments. For the "Rathbone" Shield.—This competition will take place, by the kind permission of Mr. Raine, the manager, at the Village Main Reef Mine, Johannesburg, at 10 a.m. on Sunday, the 30th instant, the teams being expected to treat some supposed injury sustained underground, bring the patient to the surface, where they will submit to further tests. Eleven teams from the mines in the Transvaal and the Railways in the various Provinces have entered so far, and it is anticipated that the competitions will be keenly contested.—Yours, etc.,

V. E. DAVIS.

Johannesburg, Nov. 15.

MINING MEN AND MATTERS.

Mr. Francis Oats, Chairman of Directors of De Beers Consolidated Mines, Ltd., has returned to Kimberley after an extended trip to Europe.

* * * *

An invitation has been given by the mining groups to the engineering staff of De Beers Consolidated Mines to visit the following properties: Crown Mines, Brakpan Mines, Premier Mine, New Kleinfontein, Apex Colliery, Simmer Deep, and the laboratory of the Consolidated Gold Fields of South Africa, Ltd. The party will remain a week on the Rand and will be accompanied by Professor Yates.

* * * *

At the monthly meeting of the Geological Society of South Africa, held in the Council room, Chamber of Mines, this week, a paper was read by D. P. McDonald, M.A., B.Sc., entitled "Notes on a Form of Black Diamond from the Premier Mine." The author said that the mode of occurrence of the black diamonds was not exactly known, but they seemed to occur all over the pipe and at the different depths worked up to now. Specimens were exhibited. The specific gravity of the material, it was shown, is 3·47. An interesting point about the black diamond was that when it was roasted the black material was burnt off and white diamond was left behind, so that the black material was quite readily removed by simply roasting. The author of the paper explained results produced from a microscopic examination of the black diamond. Dr. G. S. Corstorphine, discussing the paper, said it was possible that the pieces as exhibited had been occurring in the Premier Mine much longer than they had been observed. The diamond-sorters said, "That is no diamond at all"; but there was no doubt it was a diamond, and, in that peculiar form, extremely interesting. It was caught on the "grease tables." Dr. E. T. Mellor presided at the meeting. Mr. Eugene Callens was elected a member of the society. Dr. G. S. Corstorphine read some criticisms made by Mr. Molyneux on "The Geology of Katanga and Northern Rhodesia: An Outline of the Geology of South Central Africa" (paper by F. E. Studt, A.R.C.S.).

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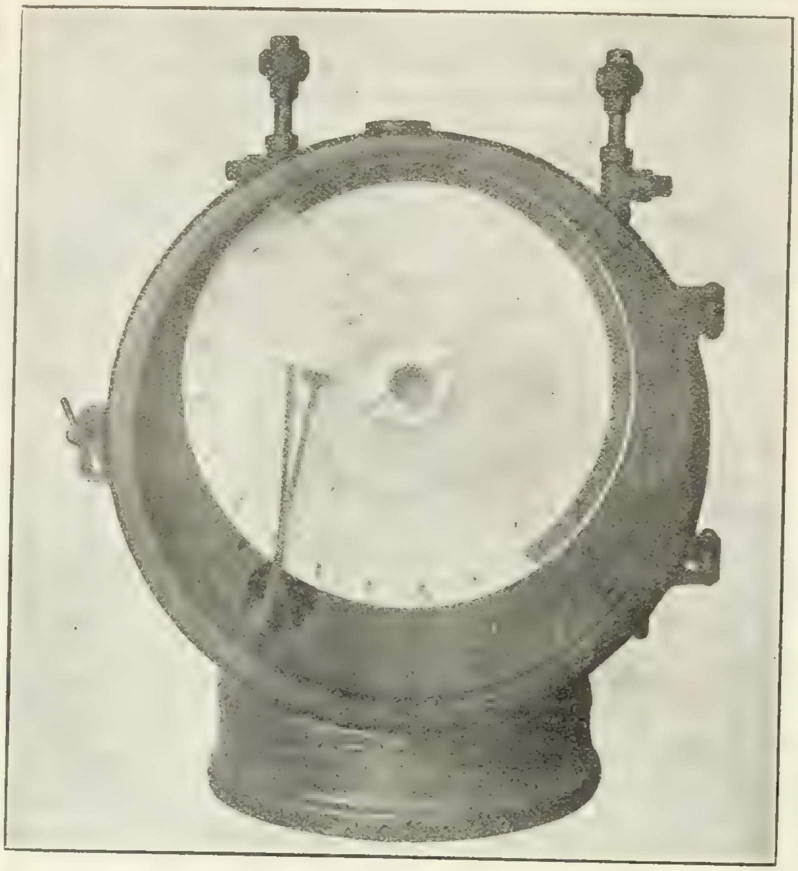

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Engineering Notes and News.

Ropes for Great Depths.

For a number of years it has been more and more painfully recognised as a great difficulty to modern mining that with growing depth and increasingly heavy hoisting loads the diameter of hoisting ropes must, under prevailing safety provisions, grow to such an extent that the ropes become too unwieldy for practical work. The latest German contributions to the very voluminous literature devoted to proposing remedies for this aggravating state of affairs come from Dr. Speer and Mr. F. Baumann, M.E., and are published in *Kohle und Erz*, No. 35, and *Glückauf*, No. 40, respectively. The remedies proposed by both authors, in common with most of their predecessors, are either the use of wire ropes of increased tensile strength, or the reduction of the now prevailing safety co-efficient, or the combination of both. As regards the first, it is pointed out that the tensile strength of 180 kgs. per sq. mm., which may in present circumstances be regarded as about the maximum in practical work might, and probably will, within measurable time be raised by the use of improved wire in the manufacture of ropes to 210, or, according to Dr. Speer, even to 240 kgs. per sq. mm. As regards the safety co-efficient, both authors arrive, on the basis of most exhaustive and detailed calculations, at the conclusion that the figure at present imposed by the mining regulations might, without any danger, be considerably modified. In fact, Mr. Baumann sums up his computations by stating that with a rope whose tensile strength is equal to 210 kgs. per sq. mm. the minimum safety co-efficient, applied to the combined weight of rope and loaded skip, ought to be fixed as follows: Up to 10 tons hoisting load and to 1,500 m. depth co-efficient = 6; up to 20 tons hoisting load and to 1,000 m. depth co-efficient = 6; up to 20 tons hoisting load more than 1,000 m. depth co-efficient = 5; up to 30 tons hoisting load and to 1,000 m. depth co-efficient = 5; up to 30 tons hoisting load more than 1,000 m. depth co-efficient = 4.

A Mammoth Industrial Concern.

The annual report of the "Phoenix" Works, Ltd.—who are represented in South Africa by Messrs. Andrew & Thienhaus, Ltd.—has just been issued, and gives one some idea of the magnitude of one of these European industrial concerns from which South Africa (and in particular the Transvaal) draws its supplies of steel and iron products, such as steel rails, piping, fencing material, etc. The above concern has at present over 41,000 employees on its pay register (including the clerical staff), and has a nominal capital of over five millions sterling. The production of the works during the financial year 1912-13 amounts to approximately as follows: Coal, 5,208,000 tons; steel billets, 1,483,000 tons; while in addition to the above the finished manufactures, such as steel rails, angles, tees, channels and bars, plates, piping, wheels and axles, etc., etc., amounted to approximately 1,537,000 tons. Dividing this by 52, we have an output of over 158,000 tons per week. The profit available for distribution was M:32,193,443·00, but it was decided to declare a dividend of 18 per cent. only, absorbing a sum of M:19,080,000·00 and, after carrying forward a substantial amount, to utilise the remaining balance in writing off depreciation on plant, etc.

Safety Rules.

General rules for the prevention of accidents at the Copper Queen Company's mines, in Arizona, include the following for underground work: (1) As all mining work is hazardous, extra care should be taken not only for your own safety, but for the safety of men working with you. (2) Watch for danger signals; they are often unnoticed if there is not sufficient light. (3) Every manhole and place of refuge shall be kept constantly clear, and no refuse shall be placed therein, and no person shall in any way prevent access thereto. (4) The general condition of the timbering in the mine shall be safe. The men shall take all the necessary precautions to insure the safety of the timber in the working places. (5) In all stopes where square sets are used, it shall be the duty of men working in stopes to see that the floors are properly centred on the caps, particularly after blasting, and spiked wherever deemed necessary. (6) When working in heavy or untimbered ground, care should be taken that there is plenty of room for a quick exit. All obstructions such as cars, wheelbarrows, etc., should be moved out of the way. (7) Existing winzes opening directly from the floor of the drift or stope must be kept covered by a substantial hatch, or planking, except when in use, at which time the passage to persons other than those working at the winze shall be barred off by a substantial rail across the roads of access to the openings. (8) The miners shall be responsible for the safety of the roof and walls of their working places. (9) In mining, care must be taken in approaching workings thought to be filled with water, and the boreholes must be kept at least 20 ft. in advance of the drive. (10) Planking over sumps and ditches must be kept secure. (11) No candle or lamp shall be left burning in a mine when the person using the candle or lamp departs from his work for the day. Sconces must positively be used, except when candlesticks or carbide lamps are employed. Lights must be placed so that timber cannot catch fire. (12) Employees shall, as soon as discovered, inform the foreman or shift boss of the unsafe condition of any working place. (13) Be sure that chutes are protected so that men cannot fall into them. (14) Men are strictly forbidden to carry tools upon their shoulders in any drifts where electric wires are installed. It is very dangerous and may result in death. (15) Two openings to surface are provided by law, except in the case of mines that are being opened. (16) Men should learn the different openings from their place of work, and their attention is called to signs at the intersection of drifts which direct them to shafts or outlets.

The Transvaal Farmers' Year Book.

FOR the convenience of hundreds of persons interested in Agriculture who find it necessary to repeatedly apply to the Union Agricultural Department for advice on the various activities with which they are concerned, it has been decided to publish a work entitled "The Transvaal Farmers' Year Book," which will deal exhaustively with all subjects likely to be of assistance to the farmer operating more especially in the Transvaal Province.

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Finance, Commerce, and Industries.

Export of Fruit.

A notice appearing in the "Government Gazette" states that the inspection by the Government of fruit intended for export will be subject to certain conditions. Facilities for the cold storage of fruit at East London, prior to shipment, not being adequate, inspection will for the present take place at the ports of Capetown, Port Elizabeth and Durban only. The inspector will furnish full reports, as required, to the exporters as to faults in packing, misnaming of varieties, making of boxes, condition of fruit selected, reasons for rejecting, and other points which may be of assistance to exporters. Information with regard to graders and other matters connected with the export of fruit can be obtained from the inspectors of the Department of Agriculture. Exporters or their representatives may be present at the inspection of their fruit. The conditions referred to include the form of agreement to be completed by each exporter wishing the Government inspector to inspect his fruit. Every box of fruit passed by the inspector will be branded by him with the coat of arms of the Union of South Africa, encircled by the words "Passed by Government Inspector." For each consignment examined by the inspector a charge at the rate of 1s. per 40 cubic feet will be made to the exporter on all boxes going 25 to the ton and under, and 1s. 6d. for all boxes going over 25 to the ton. The disposal of boxes of fruit not passed and branded by the inspector can be arranged by the exporter with the Harbour Department of the Railway Administration or with an agent at the port of shipment. The Department of Agriculture accepts no responsibility with regard to the disposal of such fruit. The exporter must pay the charge for the cold storage and make his own arrangements for the disposal of his fruit Overseas.

* * * *

Banking Statistics.

Recent issues of the "Union Gazette" have contained the statements of the various banks of South Africa in the form of abridged balance sheets, issued in terms of the Cape law, as well as a statement showing the liabilities and assets of the Union Land Bank. In the former case the returns are brought down to as recent a date as the end of September, while in the case of the Land Bank the statement shows the position on July 31st. In the Cape Province, we find that the amount of fixed deposits has increased by very nearly three millions sterling. The floating deposits have grown by a million and a quarter, and the total deposits at bank branches within the Province amounted on September 30th to £13,296,000, an increase of over four millions sterling. That increase represents, in a sense, the savings of the people, but it has had the important effect of enabling the banks to increase their advances, and, as might be expected, we find that the increase in the advances made since Union has been about three and a half millions sterling, the actual amount loaned in the Cape Province to-day being, roughly, £12,200,000. The ratio of advances to deposits is high. This indicates two things: firstly, the buoyancy of credit throughout the Province, and, secondly, the extreme dearth of capital available for development purposes in South Africa. The same facts emerge from the figures relating to South Africa as a whole. The total deposits at the various bank branches amount to £40,264,000, of which 51·4 per cent. represents floating accounts. The advances made throughout the Union amount to £37,952,000, which is 94 per cent. of the deposits.

* * * *

Chamber of Commerce Views.

At the last Chamber of Commerce meeting, the President (Mr. Wallace Soutter) referred to the railway traffic returns and trade generally. The increase in railway traffic for 41 weeks was £184,080, but during that period effect had been given to a reduction of rates introduced in October last year. Tonnage for the whole Union had been asked for, and would probably be received. The tonnage for the month of September showed an increase over that of August, and taking the nine months to the end of September, and striking an average, it was £39,301, as against £40,319 last year, or a decrease of £1,050. He laid special stress on these figures, in view of a certain amount of pessimism with regard to trade, and certain statements which had been made by important gentlemen, which had appeared in the Press. For those reasons the Chamber had thought it right to issue a memorandum to the Press, pointing out that after all the volume of trade had not shown such shrinkage as to call for any alarm, and he thought the latest figures would bear that out. The Customs returns also show an increase. There was an increase in imports, and a striking figure in exports was the increase for eight months ended August 31st of £1,176,725, in regard to the export of products other than gold and diamonds. The imports of foodstuffs, £1,218,486, demonstrated what room there was for an increase in the agricultural operations of this country. The President also referred to the shipping agreement, and in conclusion he said:—"I think the proper course for South African merchants to adopt is to stand by the agreement for the time being, to proceed at once with the formation of a South African Sea Freight Advisory Committee, who by conference and negotiations with ship-owners would provide an additional safeguard to the interests of South African importers, and who would, in addition, be able to guide South African importers in their attitude towards the Conference Lines. This is a sound policy, and I venture to suggest that it would be folly at the instigation of a small minority to disturb the present conditions till we are satisfied that there is a reasonable prospect of improving them through the competition of other lines."

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Standard Bank.

Lord Welby, presiding at the half-yearly meeting of the Standard Bank last week, referred in eulogistic terms to the late Sir Walter Hely-Hutchinson, who, he said, was a man of proved ability and the possessor of the widest knowledge of South African men and matters. Proceeding, Lord Welby said that the demand for capital to develop world-wide enterprises was increasing at an unparalleled rate. He dwelt on the necessity for a policy of caution by the banks generally, and said there were indications that the demand for capital was becoming too large. There had, he proceeded, been an all-round progress in industries, and the importation of pedigree stock had had a marked and beneficial effect in improving the breed of cattle and sheep, while the carriage of pedigree stock freight free by the Union-Castle Company had been most helpful. Several shareholders dwelt on the loss sustained by the bank in the death of Sir Walter Hely-Hutchinson. One shareholder urged that greater attention should be paid to Rhodesia in view of the Chartered Company's land settlement scheme.

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Future Scarcity of Tin.

In *Der Eisenhandler* appears an interesting article on the future of tin. The writer observes that the tin supply of the world has been for some time a subject of apprehension to consumers. The exceptionally high prices prevailing during the past few years have not had the ordinary effect of increasing the annual production, and it would appear as if the deposits are becoming gradually exhausted, whilst fresh sources of tin are not being discovered. Tin is found in most parts of the globe, though in small quantities, except in favoured districts where primitive rocks have been superficially exposed by upheaval and denudation. In 1910 the world's production of tin aggregated 105,794 tons, of which the major part was derived from the Straits Settlements and the remainder from Bolivia, Cornwall, Australia, and China. It is commonly supposed that the Straits, which yielded 54,000 tons in 1910, will become exhausted in a not distant future. Should this happen the deposits now known could not be rendered capable of covering the deficiency, and if new mines are not opened the quantity put on the markets of the world must dwindle. Up to the present, notwithstanding great efforts, no metal has been found that can satisfactorily take the place of tin. This metal is most largely employed in the manufacture of tin-plates, which are used in the making of boxes, etc., for the preservation of edibles, and for this purpose other metals, such as lead and zinc, would fail to meet the requirements; as tin-plate resists the action of air and acids, and is most easily soldered, it is improbable that a substitute will soon be found. Tin-plate cans of every description are used for paints, varnishes, oils, etc. The quantity absorbed in the preparation of alloys is far from inconsiderable, and to make a change would entail a radical alteration in many branches of manufacture. The production of tin is therefore of much more importance than is generally imagined. Although for the approximate future there will doubtless be sufficient tin to equal demands, it is quite possible that at a time not very remote a scarcity of the metal may make itself felt. The high price of tin is an important factor in the metal market and tends to encourage its replacement, but the value of tin appears more likely to increase than otherwise.

Giant Mines.

The amount standing to credit of profit and loss account at June 30, 1912, was £28,191, to which is added the net profit for the year under review amounting to £75,645, making a total of £103,837. Of this amount, dividends Nos. 13, 14, 15 and 16, amounting to £77,125 8s. 10d. were paid during the financial year. From the balance available the directors have transferred the sum of £10,000 to reserve account, making the amount set aside under this head £80,000, and have written off the cost of boring operations during the year, amounting to £8,226, leaving a balance of £8,485 to be carried forward. For the year, 131,887 tons were crushed, yielding 42,556 ozs. of fine gold, valued at £179,928 0s. 3d., as compared to 134,209 tons treated for 52,116 ozs., valued at £221,405 11s. 3d. in the previous year. The working profit for the period amounted to £92,278 11s. 3d. as compared to £128,337 3s. 2d. in the previous year. The working costs for the period were 13s. 3·49d. as compared to 13s. 10.43d. for the previous year. The ore in sight at June 30, 1912, amounted to 243,687 tons, of an average value of 8·2 dwts. Of this quantity 131,887 tons averaging 6·45 dwts. were crushed during the year under review. Owing to the heavy subsidence reported early this year a reduction of the grade of the ore through the unavoidable inclusion of country rock has occurred. Additional low grade ore is now being broken in the upper levels of the mine which will add to the tonnage available, however, the engineers report that it is impossible to state with accuracy the ore reserve figures, but there is every evidence that a considerable length of time will elapse before the profit-earning stage is exhausted, even if no addition is made to the reserve by subsequent operations. Development work has been chiefly confined to the boring operations at the seventh level, with the object of locating the faulted reef. Boring operations have also recently been carried out at Giant South with encouraging results on this section of the company's property. The acquisition of the Good Shepherd Option was reported on September 26.

Anglo-French Exploration.

The Canadian press is very elated at the growing interest of English capital in the Hollinger Gold Mines. According to the *Toronto Globe*, the Anglo-French Exploration Company, after an examination of the property by its engineers, has increased its holding to about 21,000 shares, which, at the current market price, represents an investment of about £70,000. On December 31 last the Anglo-French Exploration Company held 9,500 shares.

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Allen's Miners' Drill Steel.

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Representative:
G. F. Wills,
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THE WEEK IN THE SHAREMARKET.

Stagnant—Diamonds Easier Owing to Temporary Restriction of Demand for Stones.

The feature of the week has been the lapse in the diamond market, caused mainly by the bad news from London in regard to the market for stones, and doubtless also to the plethora of new syndicates. The success of Pilandsbergs has brought several other flotations in its train, and, as the capacity of the market for diamond syndicate shares is not unlimited, all have suffered as a consequence. Rand stocks remain quiet and firm, with very little demand. Dividend-payers are still being picked up, and close students of the Rand aver that there are several stocks now to be got at bargain prices. It is, perhaps, too early to attempt a forecast of the coming dividends, but several good announcements from Barnato mines are expected. Tin stocks remain quiet, with little business doing. With an improvement in the market for diamonds in Europe, and the approach of the dividend season, a favourable reaction in prices generally may be reasonably anticipated.

* * * *

	Fri., 14th.	Sat., 15th.	Mon., 17th.	Tues., 18th.	Wed., 19th.	Thurs. 20th.
Crown Mines	—	—	—	—	—	117 6*
Adair Ushers (15/-)	0 3*	—	0 3*	0 3*	—	—
African Farms	15 5	15 10	15 6*	15 0	15 6*	15 3*
Apex Mines	—	—	17 6*	18 6†	18 0†	15 3*
Aurora Wests	—	—	—	—	—	6 0*
Bantjes Cons.	—	13 6*	13 6*	—	13 6*	13 9*
Benoni Cons.	2 0*	2 3	2 1*	2 3	2 3	2 0*
Blaauwbosch Dia. ..	—	—	—	—	—	81 3
Brakpan Mines ...	46 0*	48 0*	50 0†	50 0†	45 0*	42 9*
Breyten Collieries ...	—	26 6*	—	26 0*	26 0*	—
British S.A.	18 6*	19 6*	19 6*	—	18 6*	18 9*
Bushveld Tins	—	0 6*	0 6	0 7	0 7*	0 7*
Cinderella Cons. ...	—	5 9*	5 9*	5 0*	5 9*	—
City & Subs. (£4) ..	47 6	47 0*	47 0*	47 0*	47 0*	47 3*
City Deeps	55 0	54 6*	54 6*	54 3*	54 0*	54 0*
Cloverfield Mines ...	4 0	4 3	4 1*	4 4	4 5	4 1*
Clydesdale Colls. ...	—	7 6*	—	—	—	—
Cons. Investments ..	20 0†	17 6*	—	—	16 0*	17 0*
Cons. Langlaagtes ..	28 6*	30 0†	30 0†	28 0	27 6*	26 6*
Cons. Main Reefs ...	16 6*	16 9*	17 0	16 9*	16 9*	17 0
Cons. Mines Select.	9 0†	—	—	—	—	—
Coronation Colls. ...	11 6*	12 0	—	12 6*	—	—
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5*	0 5*
Crown Diamonds ...	7 6	7 6*	7 9	7 9*	8 3	8 0*
Crown Mines Deb. ..	—	—	—	£100†	—	£100†
Doornhoek Tins ...	6 0*	6 0*	6 0*	6 0*	—	6 0†
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	8 0*	8 0*
East Rand Coals ...	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
East Rand Deeps ...	1 2*	1 2*	1 2*	1 6†	1 3*	1 0*
East Rand Props. ...	41 0*	41 9*	—	40 0*	—	41 0†
Eastern Golds (1/-)	1 0*	1 1*	1 1*	1 2†	1 0*	1 0*
Frank Smith Diam.	5 10*	6 0*	5 9	6 0	6 0*	6 0*
Geduld Props.	20 0*	20 0*	20 0*	21 6†	20 0*	22 0†
Glencairns	3 0*	3 0*	—	3 3†	3 3†	3 3†
Glencoe (Natal) Cols.	7 0*	7 0*	—	—	—	—
Gylnn's Lydenburgs	13 0*	—	14 0*	14 0*	—	14 6†
Government Areas ..	19 3†	18 9*	18 6	18 6*	18 6	18 3*
Jupiters	—	3 6*	3 9*	4 0†	3 6*	3 3*
Kaalfontein D.	0 3*	0 3*	0 3*	0 3*	0 3*	0 6†
Klerksdorp Props. ..	—	1 11*	1 11*	1 11*	1 11*	—
Knight Centrals ...	8 9	8 11	8 9*	8 9*	8 9	8 4
Knights Deeps	—	29 0*	—	—	27 6*	—
Lace Props.	2 9*	2 9*	3 0†	3 0†	2 7*	3 0†
Luipaardsvlei Est. ..	—	—	—	8 6*	8 9*	—
Lydenbg. Gold Fms.	2 11*	2 10*	2 10*	2 10*	2 10*	2 10*
Main Reef Wests ...	7 0*	7 0*	7 6	8 0†	6 0*	6 6*
Middlevlei Estates ..	0 9*	0 9*	0 9*	0 9*	1 0†	0 9*
Modder B.'s	78 0*	78 0*	78 0*	78 0*	78 6*	78 0*
Modder Deeps	31 6*	32 6	32 3*	32 0*	31 9*	31 6*
Natal Navigtn. Col.	15 0*	15 0*	15 0*	—	15 0*	15 0*
New Boksburgs ...	—	0 10	0 10	0 10*	0 9*	0 9*
New Eland Diam. ..	30 0†	30 0†	30 0†	26 0*	30 0†	30 0†
New Era Cons. ...	4 9*	5 0*	5 0*	5 2	5 0*	5 0
New Geduld Deeps	—	1 10*	1 10*	1 10*	1 10*	1 9*
New Kleinfonteins	—	21 3*	22 6†	—	21 3*	21 9†
New Modders (£4)	—	—	—	225 0*	—	—
New Rietfonteins ...	—	—	—	—	3 6†	—
New Unifieds	—	—	12 6*	—	11 6*	—
O.F.S. & Trans. Dia.	1 7*	1 8	1 10†	1 8*	1 10†	1 7*
Piggs Peak	9 0*	9 0*	9 0*	9 0*	9 0*	9 0*
Potchefstroom Est...	—	0 6*	—	—	—	—
Pretoria Cement Co.	45 6*	45 0*	—	—	—	45 0*
Princess	4 3*	4 3*	4 3*	4 6*	4 6*	4 6*

*Buyers. †Sellers,

	Fri., 14th.	Sat., 15th.	Mon.. 17th.	Tues., 18th.	Wed., 19th.	Thurs.. 20th.
Rand Klips	1 10*	1 10*	1 10	2 0	2 3	2 1*
Rand Nucleus	1 9†	1 4*	1 5*	1 4*	1 2*	1 6
Randfontein Deeps ..	3 0*	3 0*	3 0*	—	3 0*	3 0*
Randfontein Estates	24 3*	24 0*	24 0*	—	25 0†	25 0†
Roberts Victors	26 6*	27 0*	—	27 6*	28 9	27 0*
Robinson Deeps	—	—	28 6*	—	—	31 0†
Rooiberg Minerals ..	27 3*	27 6*	27 6*	27 6*	—	27 9*
Rood. Durban Deeps	19 0*	19 0*	19 0*	19 0*		19 0*
Rose Deeps	44 0*	—	44 0*	—	45 0*	45 0*
Ryan Nigels	—	—	—	—	3 0	—
Shebas	—	5 0*	5 0*		5 0*	5 0*
Simmer Deep	1 0*	1 0*	1 0*	1 0*		1 1*
S.A. Breweries	41 0*	41 0*	—	—	—	40 6*
S.A. Diamonds	30 0*	30 0*	30 0*	30 0*	—	30 0*
S.A. Lands	2 10	2 9*	2 11	2 10*	2 10*	2 10
Springs Mines	—	11 0*	11 6*	11 9	11 6*	10 0*
Steyn Estates	13 6†	13 6†	13 6†	13 6†	—	13 6†
Sub Nigels	8 0	8 0*	8 0*	9 0†	—	7 6
Trans. & Delagoa ...	—	—	40 0*	40 0*	40 0*	—
Trans. Coal Trusts ..	30 0*	30 0*	30 6*	29 9*	—	28 0*
Trans. Cons. Lands	—	20 0	19 9*	19 9*	20 0*	20 0*
Trans. G.M. Estates	47 6*	47 6*	47 6*	48 0*	48 3*	48 0*
Tudors	—	—	2 0	2 0†	—	—
Van Ryn Deeps ...	33 9	34 0*	34 0	34 0	33 9	33 0*
Village Deeps	34 3*	34 0*	34 0*	34 0*	35 0	33 6*
Vogel. Cons. Deeps..	—	0 9†		—	—	
West Rand Cons. ...	—	—	—	—	8 6*	8 0*
West Rand Estates..	—	—	2 6†	1 9*	2 3†	2 6†
Witbank Collieries ..	41 0*	41 0*	41 0*	41 6*	41 0*	41 0*
Witwatersrands	—	68 0	—	68 0*	67 6*	—
Wit. Deeps	55 0	55 0	—	—	53 6*	53 0*
Wolhuters	12 6*	12 6*	—	—	12 9*	12 6*
Zaaiplaats Tins	32 0*	32 6	32 3*	33 6	34 3*	34 6

*Buyers. †Sellers.

Greig Diamonds.

The manager of the Greig Diamonds, Ltd. (Mr. William Murray) reports under date November 16: "The machinery duly arrived on Friday, November 14, and everything was off-loaded on Saturday at noon. Work in the last cutting is going on as usual, and, as I anticipate that the gear will take about ten days to erect, washing on a large scale should commence before the end of the month."

South African School of Mines and Technology.

DEPARTMENT OF ELECTRO-TECHNICS.

The Council of the School invites applications for the position of Professor of Electro-technics. Duties to begin 1st March, 1914. Salary, £1,000 per annum. The work includes Lectures and Laboratory practice, with excursions for Diploma Students and Classes for Evening Students.

Subject to the Council's regulations the Professor is allowed to undertake private work.

Applications, accompanied by a medical certificate of good health, should be sent with copies of testimonials (which will not be returned), stating age, professional training, and experience, to the undersigned, P.O. Box 1176, Johannesburg, not later than December 1st, 1913.

GEORGE S. CORSTORPHINE,
Principal.

Automobile Notes.

At the annual general meeting of the Royal Automobile Club of South Africa the work done during the past year by the Roads Committee was reviewed in appreciative terms by the Vice-Chairman, Mr. A. T. Hennessy, who urged members to supplement the efforts of the active committee by supplying the honorary secretary with any information as to improvement of existing roads, and the construction of new ones. It was felt that, in regard to the latter, more could be done to prevent the commission of errors by making representations in the proper quarters during the course of construction, than was possible by attempting to rectify them afterwards.

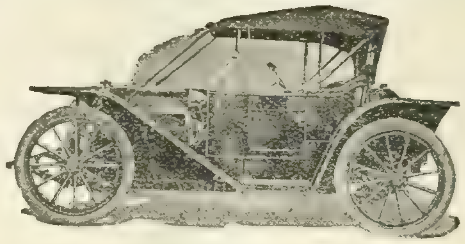
* * * *

The Standard Oil Company are reported to have perfected a new process whereby a larger amount of petrol can be refined from crude oil, and it is anticipated that the price will be reduced by 2d. per gallon. The operation is declared to have been thoroughly tested, and is an assured success. It involves an entirely new method of making petrol. The originators of the new process are understood to be working on experiments designed to evolve a still further process by which 75 per cent. of crude oil can be converted into pure petrol. New grades of the spirit for motors are to be put upon the market.

* * * *

In the course of an address on the subject of motor fuels at the Institution of Automobile Engineers, Mr. J. S. Critcheley, the newly-elected President, referring to alcohol, said that in his opinion it was quite useless to contend that this spirit could be made at a competitive price from potatoes or beet grown in Great Britain. Some authorities stated it could be manufactured in the British Colonies at 4d. to 6d. per gallon, and from peat at even less cost.

It motorists in England were serious in the endeavour to provide a fuel which can be produced in unlimited quanti-



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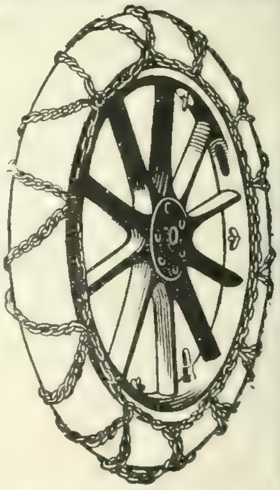
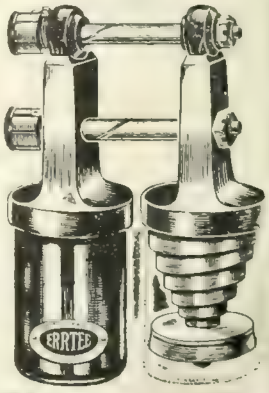
Save Upkeep Bills.——Secure Increased Pleasure.

PARSONS' RAPID REPAIR KIT.
Easy, certain, one-minute method of puncture repairing. Kit fits the pocket. Weighs one pound and comprises all tools necessary and 12 plugs.

PARSONS' NON-SKID CHAINS.
Voted by press and public alike to be "The Best Non-Skid ever invented." Supercede studded tyres and GRIP upon any road surface. Cannot injure tyres; are light in weight; low in cost; attached in 3 minutes, detached in one.



PARSONS' SHOCK ABSORBER.
Different to others — damping mediums being a volute spring and air. Long wearing. Easily fitted. Automatically lubricated. Reliable and efficient.
Illustrated Booklets together with Prices, post free upon request.



The Parsons Non-Skid Co., Ltd.
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CONSIDERABLE REDUCTIONS
IN
PRICES
OF
CONTINENTAL TYRES.

New Price Lists on Application.

ties, and not subject to market fluctuations, they should get together and devise some scheme whereby sufficient money can be provided to solve or decide the question as to the possibilities of alcohol. No doubt many of our Colonies themselves would contribute to such a scheme.

It seems, he said, somewhat ridiculous to pass resolutions to the effect that alcohol is the only fuel which will save the situation, and to take no action to carry such resolutions into practical effect. The commercial vehicle is in need of a cheap fuel, and, if alcohol could be produced at the low prices stated, means would be found to employ it economically.

* * * *

Reference has been made in *The Motor* to the employment of electrical control for changing gears. Many inventors have worked at the problem, most attention being given to it in America, where electricity has first claim as a general utility agent. After innumerable failures, a system of electric control has now been arrived at, which is claimed to be so sucuessful that it will be fitted as standard equipment to sundry American cars next session. The electric gear operator works in conjunction with the electric lighting, ignition and engine-starting installation, so far as deriving its energy from a common source. In its essential elements the new apparatus is simple, and the chief working parts are housed within the gear box. Instead of being connected with the usual hand lever, each gear striking rod is provided with a powerful solenoid, and this takes its energy from the storage battery which serves the engine-starter. So small is the amount of current demanded by the gear operator that the extra drain on the battery is very slight, it is stated. Each solenoid, however, gives a quick and sharp pull of about 150 lbs., a force considerably in excess of that usually put through the hand lever by the driver. Six small buttons mounted on an arm of the steering wheel comprise the control. These buttons are interlocked, so that when one is pressed down, it remains depressed until another is pressed, whereupon the first button automatically rises. This prevents two gears being operated at the same time. The six buttons give four forward speeds, a neutral, and a reverse, and all are connected with a master contact operated by the clutch pedal. Until the master switch is closed by depressing this pedal, no current flows to the solenoids. The clutch, however, can be disengaged without interfering with the gears, as not until it is pressed to the end of its travel does it affect the master switch. To put the first gear into operation the button marked 1 is pressed down, and almost at the same moment the clutch pedal is fully depressed for an instant. The depression of the button makes half of the contact between the battery and the solenoid, and the movement of the clutch pedal makes the other half. When contact is complete, the solenoid exerts a powerful pull on its core, which is attached to a gear shifting rod, and the desired gear is brought into operation. By pressing the neutral button, any other already depressed is brought up again, and the car is let out of gear. Strong claims are made for this new gear-changing device

REVIEW.

Gold Dredging. By T. C. Earl. Published by E. & F. V. Spon, Ltd., 57 Haymarket, London, S.W. Price 20s. net.

We have received from the publishers a copy of an interesting work, entitled "Gold Dredging," which is accompanied by 78 illustrations and 17 maps. Although dredging for gold has but little more than an academic interest in so far as South Africa is concerned, the book is to be recommended to the notice of all close students of gold mining, not only because of the clear and lucid descriptions of the manners in which dredging operations are performed, but also because it gives a useful review of fields for dredging, whilst a map shows the geographical distribution of the yellow metal throughout the world. New Zealand is described as "the home of the gold dredging industry," and much of the book deals with work in that Colony. Californian and Spanish fields are also dealt with at some length and illustrated by excellent photographs. Mr. Earl remarks: "The history of gold dredging for the past six or eight years, particularly in California, Australia and New Zealand, shows that the industry is now a sound proposition, given ordinary conditions and values. Though the latter item, in the cases of the countries cited, is abnormally low, the dividends paid annually amount to a considerable sum." The volume is certainly worthy of a place on the technical man's bookshelf.

A New Explosive.

Experiments have been made in New York with a new explosive, invented by Roberto Imperial, and called after him "Imperialita." One of its most important properties is that of withstanding concussions of considerable force and of resisting a temperature of 900 degs. F. without danger of explosion. In order to test the energy of the Imperialita 15 grammes were confined in a lead cylinder of 67 cubic centimeters, the explosion enlarging its capacity to 780 cubic centimeters. The chemical composition of this new compound is 80 per cent. of ammonium nitrate, 5 per cent. of calcium nitrate, and 15 per cent. of aluminium, and some glycerine, collodion, and mononitrotalnol and permanganate of calcium.

The best "Reef Traveller" is the *South African Mining Journal.*

Robinson Group.

RANDFONTEIN CENTRAL.

The report on operations at the Randfontein Central for the nine months ended the 30th of September states that from 1,968,846 tons of ore crushed and 1,975,951 tons treated by cyanide the total yield declared was 569,062·571 ozs. The revenue received, including £3,295, general revenue, was £2,391,275, equal to 24s. 3·49d. per ton milled. Working costs absorbed £1,674,340, equal to 17s. 0·1d. per ton, which left a profit of £716,935, or 7s. 3·39d. per ton. Expenditure on capital account amounted to £189,382. On development 70,715 linear feet were driven, risen and sunk, and 380,879 cubic feet. The ore reserves at the 30th of September are given at 8,485,554 tons. Operations have been hampered during the past three months by the general shortage of native labour. Strike expenditure, not included in the above statement, amounts to £14,232.

LANGLAAGTE ESTATE.

The report on operations at the Langlaagte Estate for the nine months ended the 30th of September states that 470,550 tons of ore were crushed. The revenue received was £520,765, which includes £19,284, general revenue. Working expenses total £398,582, or 16s. 11·29d. per ton, which left a profit of £122,183, or 5s. 2·32d. per ton. Expenditure on capital account was £20,858. The development footage driven, risen and sunk was 10,354 linear feet and 15,000 cubic feet. The total ore reserves at the 30th of September are given at 1,376,000 tons. Operations were hampered during the last quarter by the general shortage of native labour. Strike expenditure, which is not included in the above statement, amounted to £1,990.

INVESTORS' DIARY.

The following company meetings have been announced:—

Nov. 25.—Zaaiplaats Tin Company.
Nov. 25.—Transvaal and Delagoa Bay Investment Co.
Nov. 28.—Consolidated Main Reef Mines and Estate; Main Reef West.

AMUSEMENTS.

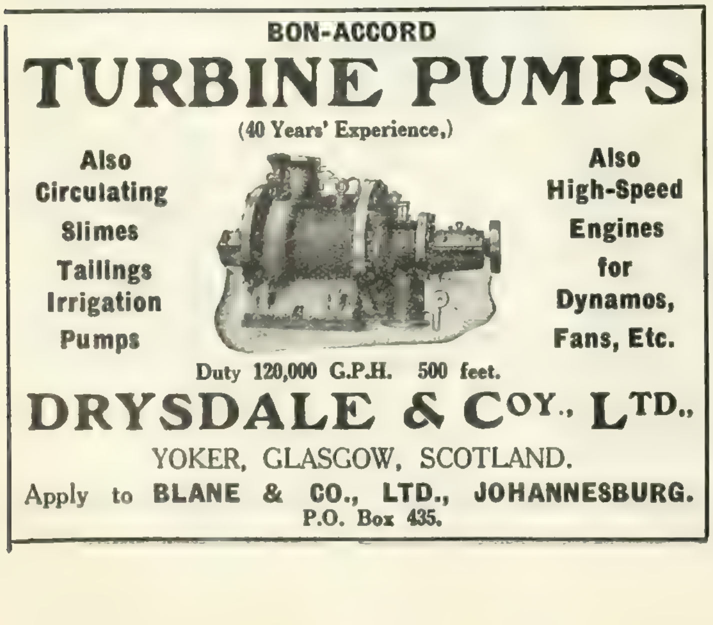
NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Gaiety Company	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Trade of Lourenco Marques.

In the course of his annual report on Delagoa Bay, the British Consul, Mr. E. McDonnell, writes:—

In submitting the present report on the trade and agricultural development of the Province of Mozambique during the year 1912, I would draw attention to the difficulties attending the preparation of such reports in this Province, where, notwithstanding the efforts of the Republican Government, official statistics are not obtainable for several months after the expiry of the current year. The trade of Lourenço Marques is perhaps peculiar to itself, for, with the exception of the Portuguese kafir wine trade, which is considerable, the local trade proper is confined to the small requirements of the limited population of the place, whilst the absence of agricultural activity and development in the hinterland renders the export of produce from the district practically non-existent. The factors in the local commercial prosperity consist in an increase in the general trade and mining development in the Transvaal, and the influx into the country of gold brought by the Portuguese native labourers working on the Rand mines. The late severe drought, coupled with the practical absence of mining development in the Transvaal during the last two years, has had a reflex effect on the trade of Lourenço Marques. The sorting-up trade and forwarding business is entirely controlled by British firms, many of them established in Lourenço Marques since its infancy. The future, however, is viewed with apprehension in local business circles owing to the competition of the South African ports. Whilst it is regretfully evident that the Portuguese colonial administration has neglected the importance of developing the magnificent natural harbour of Lourenço Marques, it must be conceded that within the last 10 years much has been done to improve the port. The Polana Channel is kept well buoyed and dredged, and at the end of 1912 five vessels could berth alongside the wharf, which is provided with sidings, cranes, and commodious sheds; but that the berthing accommodation is insufficient is proven by the number of vessels that are constantly delayed in the stream, and others, whilst coaling, are made to vacate their berths to make room for passenger and general cargo steamers. The short-sighted policy of constructing the port accommodation departmentally is patent. For upwards of 20 years various port directors and other engineers have been making plans and suggestions, but without much result. Owing to the too-frequent changes in the personnel and heads of departments there is no continuity of design or purpose; the result is an enormous expenditure of capital without the concomitant benefits. From an economist's point of view it would be of interest to compile a return of all the sums expended in the past 20 years on port plans, surveys, dredging, construction, reconstruction, wages, repairs, and plant. It is only in recent years that some efforts have been made to equip this magnificent natural port, whereas its rival, the artificial port of Natal, has spared neither energy, money, nor intelligence in creating a modern and efficient port. The last two rainless seasons, and consequent failure of native crops, greatly restricted the spending power of the native in luxuries, and caused a marked decrease in the business of the Indian trader, who practically controls the whole of the kafir truck trade throughout the Province. The kafir truck trade was, in former years, largely supplied through British export houses, but owing to the long credits required by the small Indian traders, frequent failures, and difficulties connected with the collection of debts, the business has to a great extent now passed into the hands of Continental export houses. Their local agents are allowed exceptional freedom in granting credits, and though they successfully exclude the British merchant it is doubtful whether the business is a profitable one in the long run. It is anticipated that a marked improvement will take place in this trade in 1913 owing to the proposed system of native deferred pay, *i.e.*, a considerable portion of the wages earned in the Rand mines will be paid to the Portuguese native mine labourers on their return to this Province and not at the mines. The business outlook, however, is not on the whole very hopeful.



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Notes and News.

The New Mining Regulations.

Of the new Mining Regulations, that known as No. 106 has come in for most criticism. A letter on the subject appears elsewhere in this issue, and the question raised has evoked much comment. We have taken up the matter with the Mines Department, who point out that the new Regulations represent no autocratic ukase of the Government, but were only promulgated after some sixteen special meetings with representatives of the mine-owners, managers and men, at which they were most exhaustively debated. In view of the obvious difficulty created by the new regulation now criticised, the Inspectors of the Department will exercise the necessary discretion in enforcing it; and the Department is inviting and considering suggestions regarding the issue of a suitable alternative ruling. It is hardly fair, therefore, because of this offending regulation to compare the Department to that of the United Kingdom, the practice of which notoriously is to issue regulations first and to discuss them afterwards.

* * * *

Transvaal & Delagoa Bay Investment Co., Ltd.

Elsewhere in this issue will be found a full report of the proceedings at the annual meeting of the Transvaal and Delagoa Bay Investment Company, Ltd. The balance sheet and profit and loss account will be found set out in our advertising columns, and a review of them is unavoidably held over till next week.

* * * *

A New Hammer Drill.

It is unnecessary to state that South Africa is still as diligent a searcher after the light, effective and economical stope drill—the machine which most closely approaches the ideal—as ever. The prevailing scarcity of hammer boys naturally has accentuated the value of such a machine to the Rand, and in this connection it is of special and particular interest to learn that excellent results are now being obtained through employment of a machine known as the Atlas. This drill, which is of Swedish manufacture, has been experimented with at the New Unified and Van Ryn Deep mines for some little time past, and the results obtained have been thoroughly satisfactory. The Atlas is a machine of hammer drill pattern. Previous to the introduction of the present type of drill into the Swedish iron mining industry practically all the rock drilling machines in use in that country were of reciprocating pattern, but since the introduction of the Atlas in its present form drills of the hammer pattern have been almost solely employed. The Atlas drill is of very simple construction, it weighs only 75 lbs., and it is claimed that it drills at a faster rate than considerably larger machines at a consumption of less than half the amount of air required by the bigger drills. The machine is also reported to mark a distinct improvement over other drills in regard to dust allaying. Water is fed through hollow steel right on to the cutting edge of the bit and an important point is that without plenty of water the machine cannot be operated effectively, so that the operator is not likely to be careless about his water supply. We hope to give some further facts and figures regarding the Atlas in the near future.

* * * *

Greig Diamonds.

We are officially informed that the big washing gear for the Greig Diamonds Company at Schweizer-Reneke is expected to have a trial run on December 6th. Negotiations are proceeding between the Greig Diamonds and the owner of 200 rich claims on Rietput, and if these negotiations are brought to a satisfactory conclusion, there will be another washing pan erected on the Greig Diamonds property, and ground from the Rietput claims will be hauled by aerial ropeway to the Greig Diamonds washing gear and there treated. The Rietput claims have given very excellent returns and acquisition by the Greig Diamonds Company should further enhance the value of this proposition.

The Quarter with Gold Fields Mines.

Reports just issued by mines under the control of the Consolidated Gold Fields of South Africa for the three months ended with September last reflect the aftermath of the recent strike in no unmistakeable degree, and will be found elsewhere in this issue. At each mine, although the actual stoppage in the reduction plant during the period of the strike amounted to a comparatively short time, the loss in native labour which ensued was serious. The following table sets this forth:—

Mine	Stoppage of Reduction Plant. Days	Loss in Native Labour. Per Cent.	Reduction in Tonnage Milled Per Cent.
Simmer Deep ...	4·875	17·250	14·18
Simmer & Jack ...	3·837	10·256	16·069
Robinson Deep ...	4·3	14·974	12·604
Sub Nigel	22 hours	12·156	

As to the Jupiter, this mine is, in terms of the circular issued on October 3rd, being closed down.

* * * *

Knight Central Developments.

In the report of the Knight Central Company for the quarter ended 30th September, the most important feature is, of course, the information given in regard to development. From this it is evident that there was further contraction in tonnage during the months of July, August and September. At the end of June the total payable ore reserves were 586,600 tons, whereas at the end of September the quantity had been reduced to 563,300 tons. In each case the value per ton and the width on which estimates are based remain the same, viz., 6·1 dwts. and 61 inches. On the subject of reef values, the report states: Exclusive of main crosscuts, ore passes and prospecting work, 2,073½ feet or 90·80 per cent. of the development work has been on reef. Altogether 1,970 feet have been sampled. This comprises 810 feet or 41·12 per cent. averaging 6·6 dwts. over an estimated stoping width of 55 inches, and 1,160 feet or 58·88 per cent. averaging 2·1 dwts. over 54 inches. Of the total footage sampled during the quarter of the reef south of the dyke, 965 feet is from drives south of the Simmer dyke. This footage averages 3·1 dwts. over 52 inches and includes payable patches totalling 220 feet averaging 6·7 dwts. over an estimated stoping width of 48 inches. Since driving south of the dyke was first commenced, 1,320 feet averaging 3·1 dwts. over 55 inches have been sampled. The aggregate of the payable patches, so far exposed, is 365 feet (or 27·8 per cent.), averaging 5·8 dwts. over an estimated stoping width of 54 inches. At the 16th crosscut from the east shaft there remains approximately 130 feet to reach South Reef. Since the conclusion of the past quarter there has, so it is understood, been some improvement in development values. The profit earned by the company during the three months was £2,532, or 9·6d. per ton.

* * * *

Rand Municipal Finance.

Speaking at the annual dinner of the Chemical, Metallurgical and Mining Society last Saturday night, the Mayor, Mr. N. Anstey, reminded his hearers that the Town Council had floated a 5½ million loan, since increased to 5¾ millions, on very reasonable terms. It had been floated at 96¼, at a rate of four per cent. This loan, according to the exigencies of the situation in Johannesburg, depended upon the mining industry, the life of which had been fixed in oversea financial circles at thirty years, and the loan was made redeemable within 30 years. They had at the present moment paid back 1¾ millions, they had further put to reserve and to depreciation of assets a sum of half a million. They had, in addition, very valuable trading concerns in which 2½ millions of their loan had been invested, and those investments, if put upon the market as ordinary trading concerns would be fully sufficient to pay off the remainder of the loan in the Municipality. For these reasons he considered that the position of the Municipality was essentially sound from the point of view of the public—a contention which the figures quoted seem amply to justify.

* * * *

Zinc Mines Wanted.

At the present time there is a great scarcity of zinc ore and of new zinc mines. Anybody who has a zinc deposit of promise does not need to go begging for a customer. On the contrary, zinc-mining interests are hunting for zinc mines, but so far as anybody knows now they do not exist, says the *Mining Journal of New York*. In fact, the demand for good copper, lead and gold mines is no less keen. Unfortunately, it is not known where they are. We do not mean to imply that there are no more and that they will not be found, but probably they are for the most part deep-lying deposits that await deep and costly exploring before they will be found.

* * * *

The South-Western Diamond Diggings.

The recent rush to Killarney, in the Taungs district, has drawn many diggers away from the diggings in the South-Western Transvaal, but it is probable that many will return to their old haunts, inasmuch as bitter disappointment with the Killarney field is now generally expressed. At Eastleigh numbers of diggers, who have not been carried away by sensational reports of the richness of the new diggings, and who have remained, have recently made excellent discoveries. During the past week or so a 13¼ carat stone has been found, and this sold for £175. Ten diamonds were found in one wash, including one 8¾ carat stone and one of 4 carats. Although the number of diggers is less than in October, the finds for November had, up to the middle of the week, exceeded those of last month.

* * * *

Cape Labour in G.S.W.A.

The Chamber of Mines, Luderitzbucht, German South-West Africa, have, at a meeting held on the 15th September, decided that they will in future conduct all recruiting of Cape boys and distribute them to the various diamond mining companies as required. The practice hitherto, which has led to difficulties, having been for each company to conduct recruiting on its own account, His Britannic Majesty's Consul for German South-West Africa has advised the Union Government that there is no law in force under which compensation can be claimed for a Cape boy who is injured or killed in the service of an employer in German South-West Africa. Any amount which is paid is, as a rule, only obtained after lengthy correspondence, and is very often inadequate, with the result that the injured person or his relatives have to rely on charity in the Union of South Africa. The Consul further suggests that companies recruiting Cape coloured labourers within the border of the Union for service in any country should be required to insure every labourer against accident before embarkation.

* * * *

Gaika Gold.

The report of the Gaika Gold Mining Company, Ltd., for the year ending June 30 last shows a net profit after deducting depreciation of £5,838, making, with £10,820 brought in, a total of £16,658, of which £3,336 has been transferred to development redemption account, leaving £13,321 to carry forward. The directors have written down development account to such an amount, £20,000, as brings it equal to the same figure per ton of ore reserves as last year, although a large part of the expenditure was made on the Robin Hood section of the mine, the benefit of which will come in later on. The profit realised is less than last year, entirely on account of an increased amount of antimony in the ore treated. The best method of overcoming this difficulty engages the closest attention of the directors and their engineers. The report states that the accumulated slimes, amounting to over 50,000 tons, will no doubt eventually be worked at a profit. During the year 48,304 tons were developed, 33,549 tons were treated, and the ore reserves at June 30 were 71,893 tons of an average assay value of 14·4 dwts. per ton, all high values being reduced to 40 dwts. per ton, and 14,000 of rubble ore, averaging 3 dwts. per ton.

The Diamond Slump.

The diamond market has (says the *Financial News*) taken a distinct turn for the worse during the week, and the reports that have reached us from every continental centre are most discouraging. It is now definitely admitted that no brilliant sales of any consequence can take place for a considerable time, and, unless sales of rough by the big producers are immediately stopped, a further serious fall in prices is inevitable. It transpires that several buyers of Syndicate parcels, who still took the goods for fear of losing their turns, resold at a loss immediately on their return to the Continent. Every quality of diamond, big or small, is now affected, right down to the common goods, most of which are being used for industrial purposes, which proves conclusively that the falling off is general. A great many factors are answerable for this state of affairs. Over-production and dear money are the primary causes, and dealers as well as cutters are now anxiously waiting to see whether the promises of the big producers not to sell or press goods on an unwilling market when there is no demand will be fulfilled.

* * * *

Mr. H. H. Webb's Report.

We shall be much surprised if world wide attention is not given to that portion of the report of Mr. H. H. Webb, consulting engineer of the Consolidated Gold Fields of South Africa, which deals with the incidence of working depths on gold values in the conglomerate beds of the Main Reef series. Mr. Webb's reports are printed in full elsewhere in this issue and the admission that in so far as the mines of that group are concerned "the average value of the ore developed over large areas has been getting lower as greater depth is attained," coming from a gentleman of Mr. Webb's wide experience will certainly be seized upon with avidity by those critics of the Rand who have for years past proclaimed their faith in the doctrine that great depth of working connotes impoverishment of values on the Rand as well as on every other mining field. Mr. Webb admits that there are more favoured sections of the Rand than those worked by the Gold Fields management, and it is just this further qualification that, when analysed, may refute the idea that the Main Reef series as a whole is consistently becoming less profitable as the banket beds are being followed to greater vertical depths from outcrop. For years past the question of whether there is general impoverishment or not has engaged the attentions of mining men, and just as opinion appears to be sharply divided on the question of the origin of the gold in the banket beds, so, too, are technical men divided into two camps in regard to the more economic aspect of the Rand beds. Equally experienced engineers with equally high reputations have taken up the cudgels on both sides. It is difficult to arrive at any very definite thesis or to give convincing statistics regarding this alleged depreciation in the deeper levels. And we should say that an engineer's personal experience will in the main decide the issue in so far as his own views are concerned. High grade areas and patches are encountered in depth, but if a man in charge of a mine only meets these rich sections near outcrop he will doubtless subscribe to the view that there is deterioration on the Rand as greater depths are reached. On the other hand, the manager or consulting engineer who finds that his lower levels are better than his upper levels will be a disciple of the other faith. Due allowance, too, must be made for the changed conditions as between the present day and a few years ago. The fall in grade of the ore milled as the years go by does not necessarily mean that the ore is poorer as greater depths are attained. There is the human factor—the factor of milling policy to be considered as well as the purely natural factor of actual gold contents per ton, or per claim, or per property. This is such a big subject that we cannot this week with the space at our disposal do it anything like justice. For the present we will content ourselves with drawing attention to the highly important opinions expressed by Mr. Webb as to ore values in depth and the policy of what is termed selective mining.

TOPICS OF THE WEEK.

SAFETY FIRST.

One of the most healthy signs of the times is to be found in the announcement made elsewhere in this issue that the industry had decided to embark upon an organized "Safety First" campaign. Individual mines and certain groups have long been striving to bring down the accident rate, and the columns of the papers (our own included) have teemed with more or less academic contributions on the subject. But hitherto a general co-ordinated movement has been lacking. That need the Rand Mutual Assurance Company, acting in concert with representative consulting engineers and mine managers, has new set out to meet. The names of the chairman and members of the sub-committee appointed to deal with the matter, printed in this issue, afford a guarantee of the earnestness with which the work will be undertaken. All are imbued with the utmost enthusiasm for the task they have in hand, and they have already wisely secured the sympathetic co-operation of the Mines Department and the controlling houses. The Rand Mutual Assurance Company is, of course, peculiarly fitted to initiate such a concerted movement, and, as the official information imparted to us makes plain, it has at its command a vast amount of invaluable information that cannot fail, when carefully co-ordinated and concisely conveyed, to prove of inestimable service in the coming campaign. There is no doubt that the combined experience (in regard to accidents) of some fifty working companies on the Rand, apart from others outside, which is concentrated in that office will provide a useful volume of experience, which is capable of being used to endeavour to avoid at least some of these accidents occurring at all, or so frequently, in the future, and whatever deductions can be drawn from one mine's or one group's experience will be made available for the benefit of all. Mine managers will, of course, readily realise that the endeavours of the new body are directed towards assisting them in the work they are in charge of, that the object is a good one, and that by systematic and persistent endeavour real improvement can be effected, especially if white employees are induced to think of their own and of others' safety, to use the safety appliances at their disposal, to obey those rules which are made for the express purpose of preventing accidents, to see that those under their charge do the same, and that native labourers are looked after in this respect with particular care, and above all to use common sense and avoid unnecessary risks. Efforts will be made to classify dangerous practices which should be guarded against even although such practices have not recently caused any actual personal injuries to mine employees. Details of the "Safety First" movement in the United States will be circulated and other communications, pamphlets, etc., are under consideration. From several countries, in addition to the States, other lessons can, of course, be drawn; and indeed a notable sign of the times is the growth of the "Safety First" movement in modern industry. Fortunately the progress of all such movements can be materially aided by the publicity afforded by the Press; and recognising this, the promoters of the campaign on the Rand are preparing to avail themselves fully of the facilities which the papers will, no doubt, be only too happy to offer. For our own part, we do not propose to content ourselves merely with the publication of an occasional semi-official communication on the subject. With the promoters, we recognise that reiteration is the secret of conviction, and that if the men on the mines are to be educated up to the possibility of reducing accidents on these fields, they will have to submit to a steady and continual stream of information, advice and exhortation which cannot fail in the end sub-consciously—to use the term of the Chairman, Mr. Neuhaus—to produce the desired effect. For this reason we have called the movement "a campaign"; and for this reason we shall devote at least a column of the paper each week to seconding the efforts of its protagonists. "Safety First" is to be the new motto on the mines of the Rand. Safety before false economy and deceptive efficiency. Safety before "speeding up" or the very appearance of "speeding up." Safety for white men and for natives.

Safety in every department and in every circumstance. Here indeed is a great reform—indeed, since the evil of phthisis was first strenuously tackled, to us quite the greatest and most commendable step begun since the Rand seriously undertook the task of reforming itself.

THE POSITION AND POLICY OF DE BEERS.

The twenty-fifth annual meeting of De Beers, held at Kimberley this week, showed that the position of the mines was never so satisfactory as to-day and that the traditional policy of the company has been entirely successful. The directors' report and the balance sheet and profit and loss account will be found fully set out in our advertising columns, and a detailed review of them appeared in a recent issue. The lucid and concise speech in which Mr. Francis Oats emphasised and elaborated the points in those reports contained much of special interest bearing on the position of the company, its policy and the present state of the diamond market. Though the revenue from diamonds showed an increase of £831,894 as compared with the previous annual report, the quantity put upon the market by the company was 24,000 carats less, thus disposing of the suggestion that the company had departed from its declared policy of limiting output in this respect. The total production was 200,000 carats more, but that is represented by increase in stocks, and the market was not affected. The company used its endeavours with regard to other producers in whose concerns it has an influence, with a view to upholding prices, and as a fact prices for the year were about ten per cent. higher than for the previous year. In other quarters, however, production resulted in 792,000 carats extra being placed on the market, particularly of the smaller class of goods, of inferior quality, with which at any time the market can be most easily glutted. Fortunately, De Beers profits do not depend on that class of stones, which the company could, of course, produce in any quantity were it so disposed. In accordance with its established policy of upholding prices it has consistently refrained from so doing. The higher qualities upon which the company chiefly relies are very little affected. The figures given showed that of the total South African production for the year at least 250,000 carats produced by De Beers Company were not put on the market. If, therefore, as the Chairman stated, there is a certain amount of uneasiness to-day as to the large quantity of small and inferior goods which is being offered, the responsibility does not lie with De Beers Company, but with those other producers whom it has for years past been endeavouring to bring to its way of thinking. This over-production of the smaller goods by outside producers is the only serious cause for uneasiness which the state of the market reveals. Mr. Oats showed that notwithstanding the large quantities of stones which were purchased by America in view of the coming into operation of the new tariff, the demand continues to be greater than could have been expected, and the tone of the market generally remains good. Practical evidence to this effect is afforded by the fact that the Syndicate have just declared their option for the ensuing year at a presumably satisfactory figure. We hope, therefore, that outside producers will realise, while the time is still opportune, the wisdom of the course which it is imperative that they should adopt if the existing cause of uneasiness is to be removed. The Chairman's speech contained an important reference to the position with regard to the taking over of the Voorspoed mine, fully explaining and justifying the company's action in this respect. Generally speaking, not only the financial position for the year under review, but the yield and other features of the year's working, are such as to confirm and strengthen the shareholders' confidence in the essential soundness of the company. and the wisdom actuating and inspiring its working policy. Mr. Oats included in his speech an explanation of the relations between De Beers and the selling Syndicate, and was at pains to make it clear that the present arrangement was of undoubted advantage to all parties. In entering this defence, it seems to us Mr. Oats took a very proper course, as the point is one upon which critics of De Beers are inclined to lay great stress. The whole selling policy of De Beers and its repeated requests to other producers to learn wisdom even at this late hour seem worthy of support on grounds alike of experience and commonsense. The producers, the country, and the oversea trade all stand to benefit from wise co-operation in this respect; and it is satisfactory to note that recent signs are all of a favourable nature. It would be in the fitness of things if the twenty-fifth year of the De Beers consolidation which sees it in a position of record soundness, should also completely crown and vindicate the wisdom of its declared and traditional policy.

CHEMICAL, METALLURGICAL AND MINING ECONOMICS.

Some notable pronouncements on Rand industrial questions marked the annual dinner of the Chemical, Metallurgical and Mining Society last Saturday evening. The President of the Society this year is Mr. A. Richardson, and his speech formed a thoughtful contribution to the discussion of several leading problems of the industry. If any criticism of Mr. Richardson's remarks were to be offered, it would be on the score of packing too much food for thought into his brief address. The nature of the subjects he deals with and the novelty of some of his suggestions merited much more extended treatment, and it is to be hoped the new President of the Society will bring up his proposals again in more elaborate form. His remarks in regard to the importance of the Rand as a contributor to the gold supply of the world were, of course, good sense and sound political economy. At the present stage it was very difficult to bring forward any reasonable suggestions which might be beneficial to the industry, but he touched upon two points, first, the flat contract system which was in use in many of the mines. He went on to say that the method of payment had never given satisfaction. It was also common knowledge that the system which would give complete satisfaction was still to be discovered. From a study of the many systems, he found himself most in sympathy with the formula: Whites on day's pay, and natives on contract. The system had been demonstrated in the diamond mines of Kimberley. His other point was that in their geographical position in this country they were isolated, and they had no direct association with any other mining field from which they might draw instructive lessons. Such concentration had a tendency to an inbreeding of outlook, and made it difficult for others to appreciate the problems of these fields as they were appreciated here. It would, he said, be a good thing if one or another of the knowledgeable engineers could be induced to adopt the role of post or super-post graduate and investigate the practices of other mining fields, in order that information could be utilised in solving the difficult problems with which the industry here was confronted. Of Mr. Richardson's two suggestions we confess the first makes the stronger appeal to us. It has worked satisfactorily on several mines of the Rand as well as at Kimberley. The whole question is, of course, under careful consideration at the present moment, and doubtless Mr. Richardson's suggestions will have due attention. His "super-post graduate" plan seems less practicable. Besides it involves less pressing considerations. After all, the technical press of other mining countries brings to the door of every mining man the experiences of his fellows elsewhere. The papers here—not least the excellent *Journal* of the Chemical, Metallurgical and Mining Society itself—call attention to most of the outstanding developments of mining science throughout the world, and it seems to us that thus the very functions and usefulness of Mr. Richardson's "super-post graduate" are anticipated. It may be, of course, that had Mr. Richardson been able to do more than merely outline the scheme he would have been able to convince his hearers of its value. As it was, he certainly succeeded in provoking thought by outlining proposals that are bound to excite interest and discussion. The proceedings of the Chemical, Metallurgical and Mining Society during the coming year will, doubtless, reflect that interest and—what is really Mr. Richardson's point—the consequent discussion is bound to benefit the whole mining industry of the Rand.

"SAFETY FIRST": CAMPAIGN ON THE RAND.

Inauguration of Big Movement for the Prevention of Accidents—Education, Reiteration and Publicity Necessary.

From authoritative sources we learn that the bulk of the gold mining companies on these fields insure the risks under the Workmen's Compensation Act and otherwise as regards accidents to their employees with the Rand Mutual Assurance Company, Ltd., a concern which was founded by them many years ago exclusively for this purpose. Under the circumstances, it is a matter of course that the experience of this company in regard to accidents on these fields and their causes is exceptionally valuable, and in its archives is collected material which, if made generally available, could be used to prevent, at any rate to some extent, the occurrence of those accidents, which are only too often due to preventible causes. Of course, the managers of the mines and their directorates have this matter constantly in front of them, and as official records show, a great deal has already been done towards endeavouring to reduce the accident rate. Nevertheless, the Board of the Rand Mutual Assurance Company, which is composed of the representatives of the various groups who insure with it, has for some time past been of the opinion that it could in its corporate form also assist materially in attaining this desired end. This idea has naturally the complete sympathy of all the groups. A sub-committee was consequently formed some weeks ago by the board to deal with the whole subject, and the Committee of Consulting Engineers and the Association of Mine Managers have each delegated one of their number to act on such sub-committee, which is composed of: Messrs. H. Neuhaus (chairman), J. Munro, A. French, H. A. Read, H. P. Fraser, Palmer Carter, and F. J. Trump. The sub-committee has been assured by the Government Mining Engineer that it can reckon on his whole-hearted assistance and on that of his Department wherever it can be given. Notification is now being made to managers of what may be called the organisation of the " Safety First " movement. It is fully expected that managers will realise that the endeavours of the sub-committee are directed towards assisting them in the work they are in charge of, that the object is a good one, and that by systematic and persistent endeavour real improvement can be effected, especially if white employees are induced to think of their own and of others' safety, to use the safety appliances at their disposal, to obey those rules which are made for the express purpose of preventing accidents, to see that those under their charge do the same, and that native labourers are looked after in this respect with particular care, and, above all, to use common sense and avoid unnecessary risks.

Learning the Mining Regulations " Without Tears."

It is intended to get out and distribute free of cost various pamphlets dealing with the subject, and in particular a synopsis of the Mining Regulations referring to each class of workmen, the intention being that the miner, for example shall not necessarily have to wade through some 300 Regulations, couched in legal language, in order to find out what particularly affects him. These pamphlets will be issued both in Dutch and English. It is intended particularly to bring home the necessity of also making the natives acquainted with the chief measures which they must take to ensure their own safety. In addition, it is being considered whether opportunity cannot be taken later on at convenient times and places to give " Safety First " lectures to employees on the mines.

Example from Oversea.

It is a hopeful augury for the success of the work to be undertaken that both in America and Germany the Government, not to speak of private institutions, have found that the spending of money on concerted measures with the same object in view has achieved considerable success. In various centres in Germany as well as in America " Safety First " Museums are maintained, while the Bureau of Mines of the United States is constantly issuing circulars addressed to the miners in plain language, pointing out the risks of various branches of their work, and giving hints as to the best methods for their avoidance. The expenditure of money by the Government for this purpose is evidently based on the importance of conserving the State's best asset—its workmen.

The Duty of the Workman.

Perhaps as striking a feature of these publications as any other is the emphasis which is laid on the duty of every workman to report immediately to his superior not only any danger points which he may see but also any breach of the regulations which he may observe a fellow-workman committing. Indeed, in Newfoundland so much stress is laid upon this duty that the workman who does not comply with it is considered to be an accessory to the commission of the offence. If the same spirit could be introduced on these fields it is felt that the number of accidents would very soon show a considerable decrease, for, after all, the main object of the sub-committee is to drive home to the workmen employed here that a large proportion of the accidents, as is clearly shown by official statistics, is due to carelessness, ignorance and recklessness for their own safety. The " Safety First " movement is in fact one which is mainly in the interest of the workers themselves, for, while it is true that the mining companies, if the number of accidents were reduced, would save a considerable amount of money, it is clearly of vital importance to the workman who, in the event of an accident, suffers, and who loses, if not his life, possibly his means of earning a livelihood.

New Modderfontein.

The profit earned by the New Modderfontein during the quarter ended September 30 was £119,868, or 22s. 11d. per ton milled. The reef disclosures were as follows:—Main Reef: Distance exposed, 1,439 feet; width, 10 inches; assay value, 126s. 3d. Main Reef Leader: Distance exposed, 54 feet; width, 5 inches; assay value, 278s. 9d. The serious shortage of native labour from which the company has suffered during the past quarter is reflected in the decrease in development work, tonnage milled and profit obtained. The excavations for the winder, headgear and compressor house at the circular shaft have been completed, and the work connected with the permanent banking arrangements is in hand. Though in the aggregate the footage of development was 1,638 feet less than for the previous quarter, good work has been done in the raise to connect the circular shaft workings with No. 12 shaft, 347 feet being accomplished. The reef disclosures throughout the mine continue satisfactory. Most of the ore milled has been obtained from the stopes around Nos. 10 and 12 shafts and certain stopes on the top levels of the east incline. The tonnage milled, compared with the previous quarter, was less by 41,150 tons, but with an increase in the grade of ore crushed the profit is only £20,011 less. The supply of native labour continues to be far below the requirements of the mine; of its complement of 4,013, the company had in its service on 30th September only 1,967 natives. The net amount expended on capital account was £7,820, the balance of working capital on hand being £129,675.

Village Main Reef.

The profit earned by the Village Main Reef during the quarter ended September 30 was £90,537, or 17s. 1d. per ton The reef disclosures were as follows:—Main Reef Leader: Distance exposed, 15 feet; width, 24 inches; assay value, 7s. 2d. Operations were adversely affected by the miners' strike, followed by a shortage of native labour. The present complement of the company is set down at 3,611 natives, of which there were 2,520 in the company's employ at the end of the quarter. At present practically all ore is being stoped by machine drills. Compared with the previous quarter, the quantities of rock mined and milled respectively were 7,377 tons and 7,700 tons less; surface sorting showed a slight increase, and the tonnage obtained from reclamation also shows an increase of 4·7 per cent. 29,972 tons of sand were lowered into the old workings.

THE OLIFANT'S RIVER TIN FIELD.

Opening up a Promising Area—Development of Mutue Fides.

THERE is gradually being exploited and developed in the Waterberg district of the Transvaal a new and promising cassiterite field some portions of which are likely to develop into large and important mines. The area in question forms a part of the great Waterberg district and is intersected by the Olifants River. It may be reached either from Pietpotgietersrust or from Pietersburg (through Chunie's Poort), and it has come to be known as the Olifant's River tin field. For some three or four years past exploratory work has been going on in this area, but little authentic news as to developments has been forthcoming.

IMPORTANT GROUPS INTERESTED.

In the next few months, however, developments will be completed which should result in the establishment of the value and permanence of the cassiterite deposits, and it can safely be assumed that the Olifant's River tin field will come in for a much greater measure of attention than hitherto. Already some of the leading mining corporations are interested in this field. The Transvaal Consolidated Land and Exploration Company, which, as everybody knows, is an offshoot of the Corner House, has extensive and valuable interests in this new field. Sir George Farrar, Mr. E. Brayshaw, and London and Pietersburg capital are also engaged in exploiting various properties which have either been acquired outright or are under option.

MUTUE FIDES.

One of the most interesting and important of these Olifant's River propositions is the farm Mutue Fides, where the Transvaal Consolidated Land and Exploration Company is undertaking a fair amount of development work. Up to the end of September last 530 feet had been driven, sunk and risen, and it was then estimated that there were 730 tons of tin ore at grass averaging 7·34 per cent. of 70 per cent. concentrates and 700 tons of ore developed in the mine averaging 6 per cent. of 70 per cent. concentrates. It is probable that a small reduction plant will be erected on this property in the near future. On the farm Tygerpad, too, development work is in progress and good results are reported. Native labour is at present somewhat scarce in this area, but better results are looked for in the near future, and the work of exploration will then be accelerated. Taken altogether, it looks as if highly important developments will be forthcoming from this area in the next year or so.

RECENT DEVELOPMENT FIGURES.

A Falling Off in Footage Since July—Ore Reserve Position Unimpaired.

THAT development operations have had to be materially curtailed during the past few months of labour scarcity is abundantly proved by the statistics issued by the Mines Department for the month of October. Development is, of course, a consideration and aspect of mining quite as important as production, although it is often regarded by public opinion as of lesser consequence.

STRONG DEVELOPMENT POSITION MAINTAINED.

Fortunately for the Transvaal gold industry the mines, or the great majority of them at any rate, are in such a strong position in regard to development that despite the native labour wastage of the past few months ore reserves are so great that the positions of most of the mines are still exceedingly strong in regard to development. In fact, the trouble of the past few months has not impaired the development position of the mines to any degree worthy of remark. It may be recalled that a few months ago we estimated the total ore reserves of the Rand at 110,000,000 tons, of a total value of £150,000,000 at the end of last year. In the middle of the year the rate of milling was over twenty-eight million tons per annum, but this rate has, of course, declined since the strike. At the same time development activities of the mines have become less through stress of economic conditions. It is not possible to say whether the tonnage milled has exceeded that developed, as the statistics of the Mines Department deal only with development footages, *i.e.*, the amount of ore blocked out is not expressed in tons. But it does not seem likely that mill tonnage has exceeded that blocked out.

STATISTICS FOR TWELVE MONTHS.

In the Witwatersrand area during the month of October there were driven in main drives and crosscuts 32,763 feet. In main shafts 1,917 feet were sunk, whilst footage in respect of other development was 20,705. The average number of rock drills in use was 5,791, and the tons of ore hoisted before sorting amounted to 2,292,925. There were five developing mines and in these the footage achieved was: Main drives and crosscuts, 3,429 feet; main shaft sinking, 269 feet; other development, 1,715 feet. For the whole Transvaal development footages were: Main drives and crosscuts, 43,615 feet; main shafts, 2,485 feet; other development, 23,482 feet. For the last twelve months development figures have been as under:—

	Main Drives and Cross-Cuts. Feet.	Main Shafts Feet.	Other Development. Feet.	Average No of Rock Drills in use.	Tons Rock Hoisted.
1912.					
November ...	50,182	2,976	26,555	5,845	2,659,613
December ...	48,136	2,606	25,367	5,717	2,666,995
1913.					
January	52,557	3,284	27,394	6,178	2,854,067
February ...	47,398	2,429	26,555	6,057	2,564,339
March	52,821	2,790	28,347	6,204	2,792,514
April	56,486	3,256	30,356	6,190	2,847,349
May	56,075	3,259	30,997	6,128	2,916,492
June	49,729	2,691	27,715	6,220	2,602,941
July	40,442	2,186	22,180	5,453	2,295,229
August ...	45,645	2,492	24,166	6,038	2,512,162
September	43,286	2,477	22,923	5,887	2,419,767
October ...	43,615	2,485	23,482	6,000	2,467,427

It will be noted that since June last development in all departments has been cut down in sympathy with the native labour position. As, however, the amount of rock hoisted has been correspondingly reduced it seems probable that there will be no substantial decline in the ore reserves to be declared at the end of the year in respect of the Rand as a whole.

Leeuwpoort Tin.

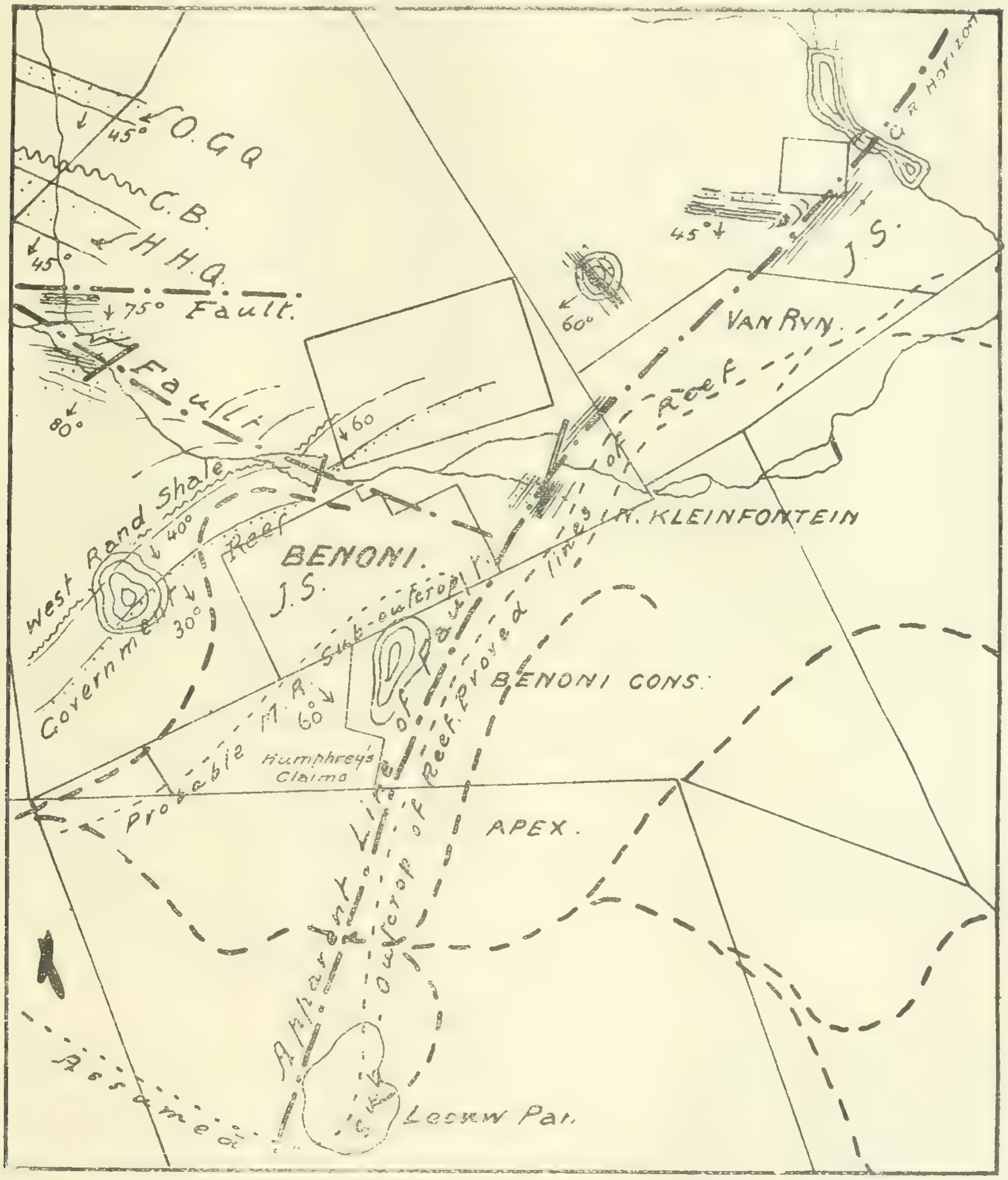
A trial run of the battery of the Leeuwpoort (African Farms) Tin Mine was made from September 22 to September 28, as a result of which minor alterations are being effected in the plant generally where the experience gained by running has demonstrated its advisability. The present low pulp grade of about 1·4 per cent. metallic tin will be continued until the whole of the slimes plant is working satisfactorily and the woodwork has properly taken up.

THE GEOLOGY OF THE BOKSBURG BREAK.

New Light on an Old Problem—Difficulties Surrounding the Question—Supposed Main Reef Fragment.

[By J. E. Mills Davies.]

That a gap exists in the extension of the Main Reef series between Boksburg and Benoni is a fact which is so widely recognised that the term, " the Boksburg break," has, like the somewhat analogous term, " the Witpoortje break," come into common use upon the Rand. It is not generally agreed, however, among geologists that there is anything beyond a superficial similarity between these two instances, and if we are to believe the information given in maps which profess to explain the conditions that prevail in the area beyond Boksburg, there is really no " break " at all between the Blue Sky mine upon the one hand and the Benoni mine upon the other. Between these two points, at which outcrops of what is supposed to be the Main Reef series are to be found, there are the Boksburg gold mines, the Van Dyk, and the Rand Colliery properties, upon each of which it is maintained that the series has been proved, developed and mined. There seems no sound reason to doubt the statement. The evidence obtained from the workings of these mines has, nevertheless, not proved the regular continuity of the Main Reef series, as it is indicated in the maps to which reference has just been made. In the accompanying sketch map, which illustrates what I consider to be some of the more prominent geological features of the district adjacent to " the Boksburg break," the course of the Main Reef series, according to the prevailing views, is indicated by the dotted line in the neighbourhood of the south-west corner. The so-called " break," according to this view, is merely a want of superficial continuity which may



Sketch Map of the Geological Features of the Benoni District.

easily be explained by the fact that in this area the upper and lower Witwatersrand strata are hidden beneath an extensive covering of coal-bearing beds of Karroo age.

Difficulties of the Problem.

The recent reference to the subject in the *S.A. Mining Journal*, and the approaching survey of the Eastern Witwatersrand by Dr. Mellor, of the Geological Survey, revive interest in a topic which at one time or another has been keenly debated upon. The problem presented to geologists in this area, simple though it may appear on paper, where the assumed V-shaped curves of the Main Reef horizon may be shown to pass easily and naturally into the gentler curves of the Government Reef and lower horizons to the north, does not seem to be of quite so elementary a kind when investigation is made in the field. Unlike the Eastern Witwatersrand, where denudation has left outcrops over large areas of difficult country exposed to view, the Eastern Witwatersrand has rock evidence of a very important kind hidden beneath a deep and all-pervading covering of Karoo beds or deep soil. The map accompanying these notes will give an idea of the somewhat confusing and scanty nature of the data which have been obtained by means of a rough traverse made during occasional visits of short duration.

Some Conclusions.

From the data obtained it seems reasonable to assume that a fault of considerable extent, and one which has probably influenced the geological structure of the Benoni area to a great degree, runs in a north-easterly and south-westerly direction from beyond the Van Ryn through Leeuwpoort, and that, as a result of the movement along this line of fault, the Van Ryn or Main Reef series has been thrust upwards and duplicated between the New Kleinfontein and New Boksburg gold mines. Evidences of this fault appear near Magindorp, north-east of the Van Ryn, where, in a railway cutting which is now being made, the Jeppestown series, just at their junction with the Government Reef series, are standing vertically against the upturned edges of some strata, probably of the Promise Reef horizon, which come in from the west and dip south at an angle of about 45 degrees. A beautiful section showing the effect of an upthrust on the eastern side of the fault is to be seen in the railway cutting referred to. Further to the south-west the Jeppestown series are found, still on edge, at the northern corner of the New Kleinfontein dam, while in a deep channel leading from the southern end of the dam to the company's works, the beds of the series are to be seen dipping at lessening angles as they are followed eastwards. The next point where evidence of the same fault seems to be unmistakably clear is on the ground of the Benoni Outcrops, where the quartzites which lie at the top of the Jeppestown series are broken and thrown in every direction. There is clearly faulted ground here, and it does not seem unreasonable, in view of the evidence already referred to, to connect this point with the two others as being upon the same line of movement. It is possible, on the other hand, that what I may term the Van Ryn—Kleinfontein fault continues from the New Kleinfontein dam in a more south-westerly direction, through the township of Benoni, and that it follows the strike of the Jeppestown series in the neighbourhood of the southern boundary line of the township. That a fault of some kind occurs in this direction is indicated by the fact that the strata marked as Government Reef and West Rand Shale, on the accompanying map, which lie west of the line of railway and course through the large pan in that vicinity, dip at less than 40 degrees towards the south-east, while in a borehole immediately on their line of dip, near the south-west corner of the Benoni township, the quartzites met with are stated to be going down at an angle of nearly 70 degrees. Another fault is plainly in evidence running north-west and south-east along the stream which feeds the three Kleinfontein dams. At the middle dam the Government Reef and the West Rand Shale are outcropping distinctly and may be traced for some distance to the north-east and south-west as indicated on the map. Further to the north-west, just beyond the upper dam, as shown in the top left-hand corner of the map, another fault, running nearly east and west, is suggested by the behaviour of the strata. I consider that some quartzites and shales near the edge of this fault represent upper horizons of the Hospital Hill series, and that a duplication has occurred in these beds; the other portion being found to the north, where they were located by Dr. Mellor nearly two years ago. Other details which may be referred to are some quartzites and shales which run across the pan near the northern boundary of the Van Ryn Company. They dip at an angle of 60 degrees to the south-west. I cannot place them with certainty, but am of opinion that they will be found to be a portion of the Government Reef series. A large amount of work has evidently been done here at various times, particularly in the Van Ryn plantation, but with the exception of a long cutting through the strata which are shown dipping south at 45 degrees, most of the workings have been filled in.

A Main Reef Fragment.

It has been stated in the *S.A. Mining Journal* that a section of the Main Reef series is being looked for on claims belonging to Humphreys, which are situated near the south-west corner of the Benoni township. In view of the position of the Government Reef there this view seems quite a sound one. There is no point, as far as I know, where a complete section between the Government Reef and the Van Ryn series can be found, for at Magindorp, where a full succession of Jeppestown beds is probably outcropping, the broken nature of the ground just about the Government Reef horizon makes a reliable estimate somewhat difficult. Taking about 5,000 feet, however, as the width of the intervening beds, and making due allowance for dips, the course of the Main Reef sub-outcrop, west of the Kleinfontein—Van Ryn fault, should be approximately as indicated on the accompanying map. Boring is now being carried out on Humphrey's claims, I understand, in order to investigate this point, and quartzite taken from the borehole has been said by experienced persons to be similar to that overlying the Main Reef series elsewhere.

Consolidated Gold Fields.

The report of the Consolidated Gold Fields Company states that the decline in profits from mining operations is due partly to the fall in the grade of ore and extra expenditure under the Miners' Phthisis Act. Turning to the strike, the directors say there is good reason to believe it was not due to any general serious dissatisfaction with the terms of employment, whilst in not a few cases it is beyond question that large numbers were forced against their will to cease work through fear of bodily injury, from which the civil and military forces were inadequate to protect them. Notwithstanding the grave anxiety to the safety of their own families, the company's officials were unremitting in their attention to the public duty unexpectedly forced upon them by the most serious state of affairs. The report says it is much to be hoped that the Union Government will realise that, not merely has the orderly continuance of an immense industry been seriously interrupted, but that the safety of large numbers of women and children has been placed in grave jeopardy, and that the present preventive force will have to be strengthened. The directors believe the good sense of the white employes and the fair spirit which was evident in the attitude of the mining houses, will shortly lead to a complete friendly settlement of all outstanding questions. Satisfactory progress has been made in Rhodesia in bringing and developing the companies into active operation. The report emphasises that there is no material justification for the doubts thrown upon the accuracy of the assay plans of the ore reserves of certain mines controlled by the Rhodesian Development Company. It had been agreed to advance, from time to time, sums sufficient to bring its subsidiary companies to the crushing stage. The report also refers to the progress of the company's American and West African interests, the latter of which has been hindered by lack of native labour.

The *London Gazette* announces that the name of the South Nigel Gold Mining Company, Ltd., has been struck off the register, and that such company is dissolved. Notice is also given that, at the expiration of three months, the name of the Cape Colonial and General Trust, Ltd., will, unless cause is shown to the contrary, be struck off the register and the company dissolved.

THE DIVIDEND AGGREGATE FOR 1913.

Good Prospects of the Barnato Group—Consolidated Langlaagte and Van Ryn Deep Likely to Announce First Distributions.

In less than a month from date the half-yearly dividend declarations will again be declared, and the total profit harvest for the past twelve months will begin to be distributed amongst shareholders. It goes without saying that the dividend aggregate will be substantially below what it would have been but for the strike and the acute scarcity of native labour which was a direct result of the strike. But having regard to the difficulties which the industry has had to face during the past few months the profit aggregates announced are certainly most creditable. In the face of extreme scarcity of coloured labour profits of approximately a million a month have been earned, the group earnings for the past three months having been as follows:—

	August.	September.	October.
Rand Mines:			
Subsidiaries	£244,735	£218,699	£228,246
Eckstein group ..	220,944	222,619	219,834
Barnato group	89,545	99,114	104,597
Robinson group	94,149	89,671	86,689
East Rand Proprietary	82,513	83,460	83,504
Gold Fields group ...	95,037	88,843	77,942
General Mining group ...	66,284	63,199	64,159
Neumann group	60,767	65,242	59,873
New Kleinfontein	24,238	23,139	23,156
Cons. Mines Selection...	21,768	20,202	16,833
Goerz group	7,968	11,127	11,782
Totals	£1,008,048	£985,315	£976,615

It may be recollected that the total dividends declared by Witwatersrand gold mines in respect of operations for the first six months of this year were £4,050,018, this including a 12½ per cent. dividend by the East Rand Proprietary Mines, not declared until August. This total is over half a million in excess of that announced in respect of operations for the corresponding period of 1912, and it is not to be expected that the aggregate for all Transvaal gold mines will show a further large advance. It will be noticed, however, that in the list of group profits the mines under Barnato control have materially increased their earnings and last month registered as much as £104,597. Probably it is from this group that chief increases in the dividend list are to be looked for. In all probability two new names, each under Barnato control, will figure in the dividend list—the Consolidated Langlaagte and Van Ryn Deep.

Consolidated Langlaagte Results.

The former mine since the new plant was started up has declared excellent results, as the following table shows:—

	Tons milled.	Revenue. £	Revenue per ton. s.	d.	Cost per ton. s.	d.	Profit. £	Profit per ton. s.	d.
Quarter ended March 31st ...	125,310	170.275	27	0	18	1	53,701	8	0
April .. .	49,300	63,334	27	9	18	3	22,070	9	9
May	49,850	66.031	26	5	17	3	23,101	9	3
June	49,300	63 189	25	8	16	4	23,012	9	4
July	42,850	55.233	25	9	17	10	17.013	7	11
August	44,100	58,003	26	0	17	2	20.216	9	2
September	42,500	58.194	27	1	16	11	22.176	10	5
October	43,740	60,790	—		—		23,680	—	

It will be seen from this that the profit earned for the first 10 months of the current year has been £204,969, so that the aggregate earning for the full twelve months may be estimated at about £240,000. It may be recalled that at the last meeting Mr. John Munro, who presided, remarked:—Since the reconstruction of the company in 1908, profits have been earned amounting to £550,000, and at the end of last month an amount of £509,375 9s. was due to the Johannesburg Consolidated Investment Company, Ltd., under an arrangement with that institution to finance the company in the scheme of opening up and thoroughly equipping the large area of your property south of the Ferreira-Crown dyke and redeeming the debenture issue of £250,000 outstanding when the company was reconstructed. The Johannesburg Consolidated Investment Company have exercised their option over the 217,321 shares under option to them until November 6 next, and will take them up before June 30. The new issue of debentures now recommended and the cash received for the shares will place the company in the position to entirely liquidate its floating debt, and leave a substantial balance towards the dividend which I confidently anticipate will be paid at the end of this year.

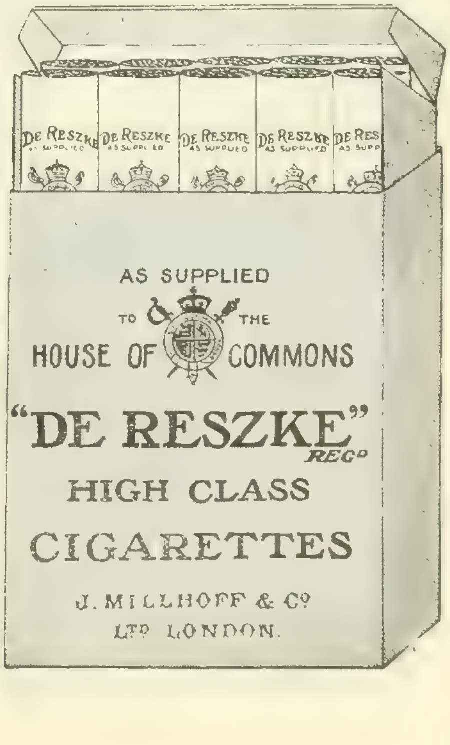
Prospects at the Van Ryn Deep.

The Van Ryn Deep only commenced milling in July last, but so satisfactorily has the plant run and so excellent have been developments that the declaration of a dividend next month seems by no means improbable. In the first three months of crushing nearly £55,000 has been earned on a capital of £1,196,892. Returns have been as follows:—

Van Ryn Deep.

	Tons milled.	Revenue. £	Revenue per ton. s.	d	Cost per ton. s.	d.	Profit. £	Profit per ton. s.	d.
August	44,800	57,514	25	8	20	6	11,538	5	2
September	31,500	51,087	32	5	20	0	19,632	12	6
October	34,400	56.985					23.680	—	

It may be remembered at the last annual meeting the chairman said:—The company has sufficient funds in hand to meet all the capital expenditure which is now being incurred, so that from the start of milling the profits realised will be available for distribution.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ZAAIPLAATS TIN.

Finances, Reserves and Equipment—Mr. Munro's Review.

The fifth ordinary general meeting of shareholders in the Zaaiplaats Tin Mining Company, Ltd., held in Pretoria on Tuesday, attracted a pretty representative foregathering of shareholders. Mr. D. M. Munro, who presided, stated that the working profit for the year ending July 31st last was £80,180, as compared with £108,364 in the preceding twelve months. In the course of his speech, the Chairman said:—These figures must be considered as satisfactory, in view of the difficulties which beset operations in the early part of the year under review, when milling operations were considerably curtailed for two months, owing to the partial failure of the water supply. The decrease in profits is chiefly due to this stoppage of operations, but also to the smaller quantity of concentrates produced through treating a certain quantity of ore below the usual grade. The capital expenditure for the year amounted to only £8,383, as against £33,437 for the preceding year, and, as pointed out in the directors' report, they anticipate that for the current year no large capital outlay will be necessary. Reviewing for a moment the working costs for the year, it will be seen that the total cost per ton milled amounted to 31s. 6d., as compared with 35s. 1d. for the previous year. Owing to the reorganisation of the account headings, it is difficult to compare the various items of expenditure; but, taken as a whole, it is encouraging to record the saving of 3s. 7d. per ton milled, especially in view of the fact that during the year a great deal of money has been spent on maintenance of plant and buildings. It should be pointed out that all expenditure connected with the working of your mine, including development, shaft-sinking and prospecting, is charged to working costs. The only items of expenditure which are not placed to working costs are those representing new machinery and new construction work. The realisation charges are always a heavy item of expenditure; but, as this charge is based on a fixed scale, little reduction can be looked for. By roasting and careful dressing, however, the quantity of impurities has been considerably reduced. With the treatment of a larger proportion of residues, and with certain small improvements to the plant, the reduction and general costs will be considerably reduced, though at the same time we cannot, as far as we can see at present, look forward to any material reduction in the total costs as it must be borne in mind that the mine workings are getting deeper, and this, coupled with the heavy hauling and tramming expenses owing to the ramifications of the ore bodies, will naturally tend to increase the underground costs. I might here refer to the interim dividend of 25 per cent. which has recently been declared. As I have just pointed out, only one dividend was paid during the financial year ended July 31st last, and your directors deemed it in the interests of shareholders, especially in view of the sound position of the company, financially and otherwise, to distribute a further sum as soon as they felt justified in doing so. As has been clearly pointed out in the director's report, the Board have decided to regard as ore reserves only such ore as is lying at grass, together with the available sands and slimes residues still to be treated, making a total ore reserve of 67,100 tons. The manager is of the opinion that the available ore in the mine is in excess of that at the end of the previous year; but, for the reasons already given, he finds it quite impossible to place a definite figure on the quantity which, in his opinion, would only be misleading and purely a matter of conjecture. All I can add is that the mine to-day is in a better condition and on a more permanent footing than it has been in the past. Every attention is now being directed to surface prospecting and exploration. It has been found that the old method of stripping the ground is tedious and expensive; but, combined with the washing of the soil, the work can be done at a profit. Moreover, it is the best method of prospecting the ground and of locating new ore bodies. Careful testing has proved the overburden to contain a considerable amount of tin, which, by a method of treatment I will explain, more than pays for the expense of stripping. The treatment plant adopted by your manager, though not a new one, is one which he has considerably improved upon, and consists of rotary pans and screens driven by electric motors. Excellent experimental results have been obtained in the short time these plants have been in commission. Three of these plants have so far been erected, but only one is in operation at present. The remaining two will be started up as soon as native labour is available. The capital cost of the plants is approximately only £250 each, the daily capacity is about 10 tons per hour, the extraction being quite satisfactory, whilst the water consumption—a most important question—is about 20 per cent. of that required for the ordinary sluicing work. Considerable alterations in the flow and treatment of the pulp have been made in the reduction works, and we have found that coarser crushing has been instrumental in reducing the proportion of slime, which is now given double treatment on vanners, in place of the old round frames. A jig was installed to deal with the coarser portion of the pulp, and has given most satisfactory results. Your manager has modified the system of classification, with improved results. The new slimes plant, which was erected for the treatment of accumulated residues, was brought into commission during December, 1912.

Pilandsberg Diamonds.

In accordance with Section 61 of the Companies Act, 1909, the first ordinary general meeting of registered shareholders in the Pilandsberg Company has been convened for the 15th December, 1913, at Lace Building, 58, Fox Street, Johannesburg, at 12 noon.

Information has been received from the Consolidated Gold Fields Company, Ltd., of New Zealand, through the medium of the High Commissioner of the Union, that vacancies for a large number of qualified miners are available at Reefton, New Zealand. The rate of pay varies from 10s. to 16s. per shift, according to the merits of individuals, who must proceed to New Zealand at their own risk and expense. The mining conditions are stated to be exceptionally healthy, and the cost of living extremely moderate. Applications should be made direct to the General Manager, Reefton; and selected candidates will be met at their ports of arrival and conducted to their place of employment.

Welgevonden Tin.

An official report on the Welgevonden Tin Mine, dated October, states:—The result of the first month's operations is as follows: 10 stamp mill ran 17·44 days; treated 1,047·5 tons of ore, yielding 10·75 tons concentrates of the assay value of 64 per cent. In addition, an estimate of the block of tin on the floors showed a further 2 tons ready for cleaning and another 10 long tons which will require to be re-treated. The duty per stamp per day was 6 tons. The manager reports that the usual difficulties in starting-up a new plant have been experienced, and there still remain a number of alterations and additions which will require to be made to ensure smooth running in the battery and a satisfactory treatment of the ore.

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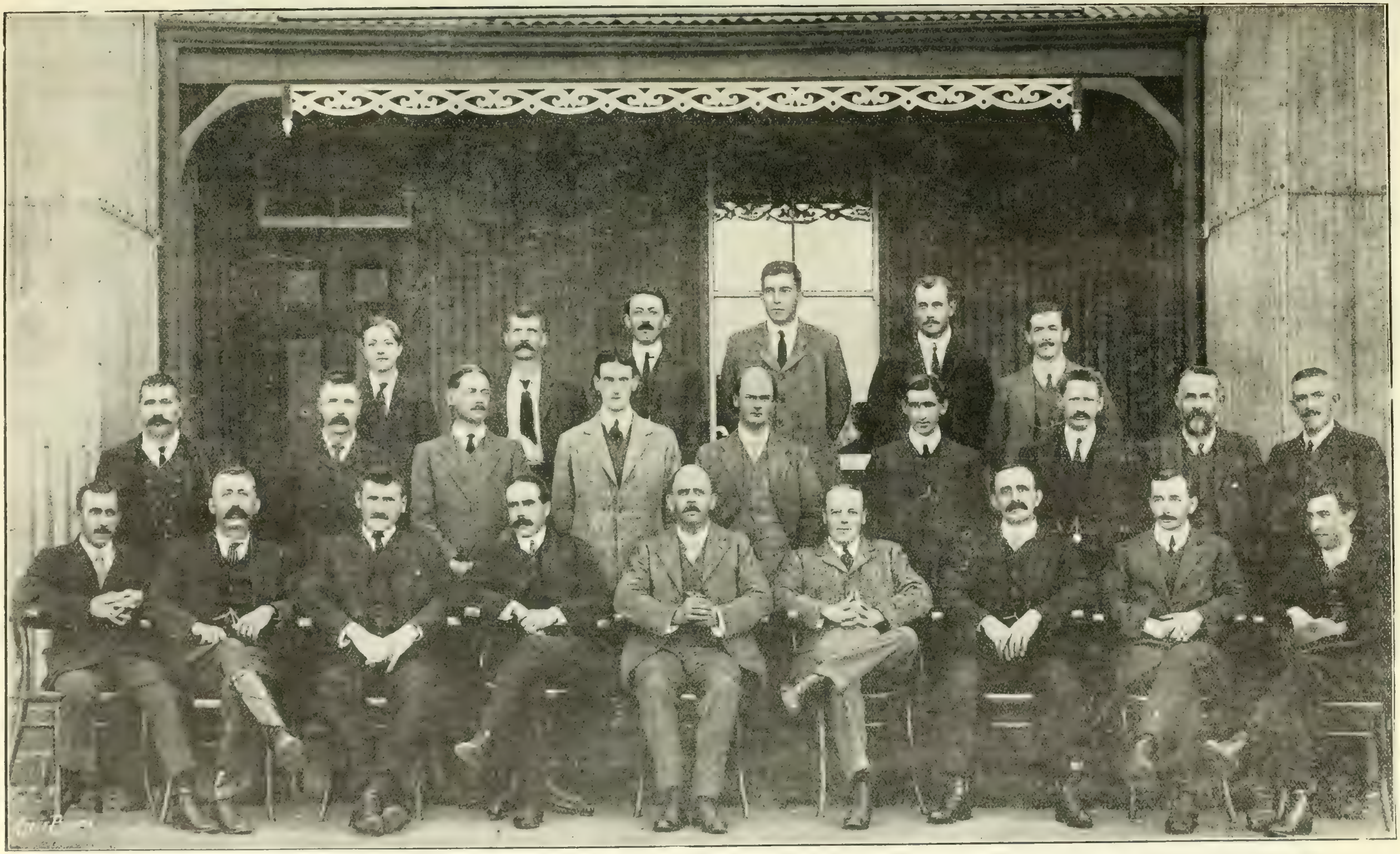

Bottom row (left to right): A. E. Pack (Shiftboss), D. W. Swan (Compound Manager), D. E. Rennir (Chief Engineer), W. M. Chalmers (Mine Captain), R. A. Alston (General Manager), L P Putland (Mine Secretary), A M. Peddie (Electrician), J. S. Edgar (Storekeeper), F. C. Gascoine (Timekeeper).
Second row (left to right): J A. Lanyon (Shiftboss), C. G McNaig (Assistant Compound Manager), W. A. C. Severn (Hospital Attendant), O. W. Bushell (Shiftboss), R E. Barker (Assayer), A Berry (Foreman Blacksmith), W. Steel (Mason), W. B. King (Foreman Carpenter), W. Adam (Shaft Clerk).
Top row: J. Kane (Assistant Timekeeper), T Kane (Shiftboss), W. F. Lewis (Sampler), P D Lothrop (Surveyor), M. J. Veldhuizen (Amalgamator), J. Minty (Foreman Fitter)

R. Oliver. Photo, 93 Pritchard Street.

THE LAND SETTLEMENT MOVEMENT.

Issue of an Important Pamphlet—Sound Advice to Would-be Settlers.

The week has seen the issue of the important pamphlet on land settlement, mentioned in these columns some weeks ago. It is happily named "Back to the Land!" being notes for the assistance of settlers in South Africa, and is by Senator Colonel the Hon. J. J. Byron, C.M.G. Its object is to contribute towards the sound settlement of a greater white population on the land, in the belief that if such a movement be well and extensively carried out, it will prove the solution of many of the most pressing problems, individual, social and political, of South Africa—in other words, it will tend to make the country great, both morally and materially, and the people happy and prosperous. It is pointed out by the author that no country in the whole world can offer such inducements and attractions as South Africa to a person desirous of going on the land. These are summarised briefly by him as follows:—

(1) The best markets; owing to the high rate of wages paid to European employees, who are willing to pay good prices for first-class produce; and also to the fact that consumers in South Africa annually pay £9,000,000 to £10,000.000 for imported food and drink, nearly all of which can be produced in this country (2) Cheap, and on the whole, good native labour. Most of the rough work can be done by Kaffirs leaving the white man more free to use his brains to direct and supplement muscular effort. No other agricultural country is so fortunate in this respect. (3) A great deal of cheap land, of amazing fertility under proper cultivation, is or can be made available. (4) South Africa is almost equally distant from Europe, Asia, America and Australasia—a great advantage looking to future export of agricultural produce. (5) No better climate for Europeans exists, and the weather conditions are generally favourable at harvest time, so that, as compared with experiences in other parts of the world, crops are rarely spoiled.

Free copies of this valuable little work may be obtained from this office. It is clearly and concisely written; carefully thought out with a view to condensing the greatest possible amount of practical advice in a little room; and no one who intends going on the land can afford to be without it. Not the least important section is that containing a list of questions that should be put by every would-be land purchaser, and the following, though only based upon and not directly taken from the longer list included in the work, may give some idea of their scope and value:—

Questions the Intending Settler Should ask the Seller of Land.

1.—Where is the land situated?

2.—How much of it is good for cultivation?

3.—What are the most suitable crops?

4.—What kinds of stock do best there?

5.—What is the nature and quantity of the water supply?

6.—What is the average rainfall?

7.—Describe the soil and depth of same.

8.—How much, if any, land has been cultivated, and for how long?

9.—How much land can be put under irrigation without pumping?

10.—What fencing, if any, has been done, and state what kind, also its age and present condition.

11.—What is the nearest market for cattle and produce, the distance of same from the farm, and the kind and condition of the roads thereto?

12.—What is the nearest railway station and distance of same from the farm?

13.—Are there any, and what kind of buildings already on the land?

14.—Is native labour plentiful, and at what price?

15.—How far away are the nearest native kraals?

16.—To what tribe do the natives belong?

17.—Describe the climate, and state if frost, hail, snow, and high drying winds are prevalent?

18.—What is the altitude?

19.—What towns and mines can be profitably supplied, and what distance away is each, and the cost of transport?

20.—What stock diseases are prevalent in the district?

21.—What fruit trees do best, and if any are already established, give the number, kind, and approximate age of same.

22.—How far away are the nearest church, school, doctor, stores, etc.?

23.—What is the price per morgen of your land, and what terms of payment will you give?

24.—What will it cost to visit and inspect the land offered?

25.—To what extent will you assist a hard-working settler from time to time to make permanent improvements, and on what terms as to repayment? (Note: Under the Land Settlement Act, 1912, the Government may advance an amount, not exceeding fifty per cent. of the total value of the improvements made by settlers, for purchasing stock, seeds, implements, and other farming requirements, provided the total of the advance does not exceed £500.)

Questions to be Asked the Would-be Settler on the Land.

1.—What kind of farming do you wish to engage in?

2.—How much capital in cash and stock can you provide?

3.—What useful experiences have you had, if any, on farms or in gardens?

4.—Does your state of health necessitate your living in any particular, and what kind of, climate?

5.—Are you able and willing to do rough work early and late, or will you have to depend entirely on hired labour?

6.—If you are married, state whether your wife and children, if any, are able and willing to assist in the everyday farm work, and if so, to what extent?

7.—What is your age, state of health, and kind of constitution?

8.—If you are inexperienced, are you willing to rigidly follow the instructions and advice given by competent persons, such as the officials of the Agricultural Department, members of the Advisory Board, experienced and successful farmers, etc.?

9.—Do you realize that it will take at least three, or more, years of hard work and constant attention, early and late, before permanent success is assured or can be hoped for, and that unless you have spare capital after establishing yourself on the land, you will have to practise the most rigid economy and save even pennies?

10.—Will you bear in mind that the soils of most districts in South Africa are more or less patchy, and because some farms are well known to be of high quality it does not follow that even the next farm to a good one is worth buying or settling upon?

11.—Will you accept the advice to carefully enquire into the *bona fides* of all persons and corporations who offer land to settlers, and will you take reliable expert advice before venturing your capital?

Sunlight G.M. Co.

The Sunlight Gold Mine, situate just below the Berg, in the Pilgrims Rest district, which was closed down some time ago, has been taken up by Mr. Brand.

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SELECTIVE MINING: Mr. H. H. WEBB'S VIEWS.

Gold Fields' Consulting Engineer on Decreased Values in Depth—Low Costs a Matter of National Importance.

No more important documents dealing with the Rand than the two reports of Mr. H. H. Webb, consulting engineer of the Consolidated Gold Fields of South Africa, contained in the annual report of that company for the year ended 30th June last, have been issued for a long while past, and we therefore reproduce in full in this issue the results of Mr. Webb's investigations. Mr. Webb, it may be recalled, visited the Rand early this year after a lengthy absence, and it was generally understood at the time of his visit that one of the chief objects of his mission was to investigate the whole question of selective mining. Mr. Webb's report does not disappoint one in this connection, for he discusses the problem thoroughly, and his conclusions and recommendations are of foremost importance. But what is likely to attract even more attention is his admission that, in so far as the mines of the Gold Fields group are concerned, the value of the ore has been getting lower as greater depth is attained. Mr. Webb thus ranges himself alongside the other members of that camp from which a doctrine of "greater depths mean lower values" has been preached for years past. It will be interesting to see whether any of the more optimistically inclined critics now have anything to say in rejoinder to Mr. Webb's dictum. Equally important is the statement that low working costs should be considered a matter of national importance. Worthy of special notice, too, is the remark which must be self-evident to all thinking men that the burdens laid upon the mining industry will have to be lightened if the maximum ultimate prosperity of South Africa is to be considered irrespective of the more profitable working of the mines themselves. The following is the "extract" from Mr. Webb's report, dated Johannesburg, 8th May, 1913:—

The term "selective mining" is capable of more than one interpretation. The first inference conveyed is that of robbing the mine of its highest or best grade of ore; or it may be taken to mean stoping from the ore reserves of the mine a more or less higher grade of ore than the general payable average of those ore reserves call for or would appear to indicate as good mining under existing conditions. Such a policy may be dictated by financial reasons or obligations, or a desire to give present shareholders the benefit of higher returns, leaving poorer ore to be extracted at some future time, when it is hoped working costs and conditions will be more favourable. There can, I think, be no doubt that, from a purely mining point of view, the policy governing mining operations should be the extraction of the total ultimate values from the profitable rock which a given area or block of ground contains at the lowest average cost without being influenced by higher temporary dividends or share values, and a group or mine following this policy could hardly be accused of selective mining even if at times it was necessary to draw upon higher grade ore reserves than the average, to bridge over a temporary period of depression in development or a momentary advance in working costs, or to maintain a fair profit while completing the necessary extraction of low grade but profitable ore from old abandoned or caving stopes. If a mine on the Rand could be developed to its boundaries and thoroughly equipped before milling operations began, something in the nature of a definite policy could be laid down at the start and followed more or less closely, subject, of course, to varying local factors. But since this is impossible, any policy adopted by a group or by a mine may at times have to be varied or modified, and there are no mines worked which I know of, particularly some classes of low-grade gold mines, in which at times a process of selection is not necessary, and this applies more or less to all the mines on the Rand. and particularly on occasions to some of our lowest grade ones. At such mines there are at times large blocks of ground being attacked which. as stoping proceeds, vary in value, and where the margin of profit is small, and where a small and possibly temporary variation may affect the profit of these blocks for the time being. In such cases it is often necessary to draw upon the higher grade sections of the mine to maintain the regular monthly profits until an improvement, as work progresses, takes place, although the general policy or effort may be to mine as near as possible the general average of the ore reserves or the indicated payable development of the mine, but it should be understood that while mining from reserves ore of average value, the mill grade will be somewhat depreciated, due to the inclusion of low grade ore from other sources such as reclamation and development faces. It can be readily understood that one of the most important factors affecting the working of each individual mine is the extent and payable value of the tonnage kept well developed ahead of the requirements of the reduction plant. Where the average value of this is maintained over large areas and great tonnages, the best policy for working each individual mine is not difficult to lay down and carry out; but when the average grade is slowly falling as additional depth is reached, the difficulties of policy and management are increased. And there can be no doubt that from our experience and in our mines the average value of the ore developed over large areas has been getting lower as greater depth is attained. High grade areas and patches are encountered in depth, but these are not as frequent or extensive nor are they in all cases as high in value as they were nearer the outcrop, consequently the general average over large areas has fallen. True, there are more favoured sections of the Rand formation than others, in which the average values in depth are better maintained. But in those sections not so favoured the serious question to meet lowering grade becomes one of working costs, and these with good management can best be met by increasing the crushing and treatment and mining capacity, consistent with the existing lay-out as well as the life of each mine. The erection of large plants and the increasing of the capacity of smaller existing ones, resulting in lower operating costs from increased scale of working, has generally been accounted the cause of the lowering of the average grade of the ore sent to the mill, and this has been so in some cases, affording an opportunity to extend the life of the mine by lowering the payable limit of its profitable ore. But there are mines on the Rand at which the lowering of working costs has been a necessity to meet the lowering grade of the ore developed, and under this latter heading may be classed such of our mines as the Knights Deep, Simmer Deep and Jupiter, and this necessity which through strenuous efforts has brought about working economies, has served to set an example through these mines of what might be accomplished by other more favoured ones. A lowering in average grade does not necessarily mean a diminution in output or dividends, but it does mean working on a larger scale to maintain them. coupled with close management and low costs, which, besides bringing this low grade ore within the margin of payability, also secure increased profit from the better grade of ore formerly constituting the reserve as well as from the excess tonnage treated. Some of the largest and best paying mines in the world are of very low grade, but conditions are favourable for low costs, wholesale mining and large tonnage. One cannot always take the nominal working costs on a mine as a limit of payability of all of the ore exposed in that mine. There are certain fixed charges on all mines which as a whole are not largely affected by the scale of working on the mine, but which as they appear in the working costs, increase or decrease per ton, depending on the scale of operations; while the reduction plant and certain other charges are not only as a whole affected by the scale of operations but are also lower per ton on account of the increased tonnage treated. But underground, mining, especially as regards breaking costs, per ton, is affected by local conditions, especially at the points of attack. Ore having a value even below the nominal or average costs of the mine may, due to favourable local conditions, easily pay to break and send to the mill, and in dealing with each of our mines an endeavour has been made to give attention to this. In going over the records of the mines of the Gold Fields group (excluding Sub Nigel) for the past three years, I find that there were some 563,000 more tons milled in 1912 than in 1910, that the average recovery had fallen off during the three years by 2s. 7d. per ton, even though the percentage of extraction had gone up somewhat, and comparing the average working costs of the three months, January, February and March, 1910, with the corresponding period for 1913, a reduction of 1s. 0·9d. per ton milled, equivalent to a total of £55,600 from the tonnage treated, has been effected during the latter period. To one knowing our mines, all of this points to an effort during this period to work the mines of the group as near as possible for the average value which the payable ore reserves of each indicated, as well as to a falling off in grade of all of them, noticeably Knights Deep, Simmer East, Simmer Deep and Jupiter, and this has been the case. This fall in average grade with depth at the individual mines has been shown to be true, not only by the screen samples of the ore milled and by the recovery value per ton, but by the careful sampling and assaying of level by level in each mine as greater depth was reached; by careful sampling of stopes on each level sending ore to the mill, and by the yearly re-cast of the ore reserves in each mine. The question of the payability of sorting has been gone into thoroughly during the last year by the engineering staff, particularly as to the advantages at our low grade mines, where the sorting has been estimated at 10 per cent. and under. At these it has been found that the tendency was inadvertently to estimate too high a percentage as sorted out, and on these low grade mines at this low rate of sorting the advantages to be gained by sorting have been found to be very doubtful, and as a matter of fact there is a slight margin of payability in favour of not sorting when large tonnages are handled. It will be seen that the question of selective mining at the Knights Deep, Simmer Deep and Jupiter—to send to the mill a better grade than that of the general payable average of each is out of the question, on account of the general low average of the developed ore in each, and the indications that such may be expected throughout the yet undeveloped areas in each. At the Robinson Deep the underground conditions and the life of the property render such a policy inadvisable. At the Simmer and Jack a policy of selective mining, until the reclamation rock in the old stopes remaining from the work of former years is entirely extracted, is not only permissible but advisable, in order to maintain a fair and proper output while this work is going on.

Writing from 233 Broadway, New York, under date October 20th, 1913, Mr. Webb remarks: In handing you the enclosed report of Mr. C. D. Leslie, your superintending engineer, covering the year's operations of the mines under his supervision in the Transvaal, I wish to emphasise the full significance and advantage of the efforts which have been made towards lowering working costs consistent with obtaining the most profitable yield. There can be no doubt that there is a gradual falling off in the average values over large areas of the ore developed as the deeper sections of the Rand are opened up, and the time will come when the full importance of considering every point which will tend to the lowering of costs for the successful treatment of enormous quantities of low grade ore will be realised by the Government and general public of South Africa at large, who are benefited by the mining operations on the Rand which form the backbone of the prosperity of the whole of that country. The closing down of a few such large properties as the Jupiter, which does not justify the continuance of operations with its slight margin of profit under present conditions, will not only deprive many white men engaged in mining of employment, but at once cut off a large revenue to the country in the form of expenditure for labour, supplies, etc. The successful working of a large low grade property means operating on an extensive scale, necessitating expenditures equal to and more often in excess of those of a higher grade property worked, on account of the better grade of its ores, on perhaps a less extensive scale. It has been the fashion to severely criticise and even decry and penalise this mining industry, but the burdens which are laid upon it will have to be lightened if the maximum ultimate prosperity of South Africa is to be considered, irrespective of the more profitable working of the mines themselves. I wish to testify to the excellent work done by Mr. Leslie and his assistant, Mr. Craig, and their efficient organization of engineers and managers who operate the mines under their charge and direction, and through whose efforts the reduction in the working costs of the mines of the Gold Fields group have been brought about.

THE YEAR WITH LUIPAARDS VLEI ESTATE.

Reduction Plant to be Enlarged—Improved Returns—Higher Grade of Ore.

THE report of the Luipaards Vlei Estate and Gold Mining Company, Ltd., for the year ended 30th June last, presented at the meeting on the 12th instant, states that the net profit for the year is £29,949 (as against £19,618 for the previous year), and this amount, added to the sum already standing to credit of profit and loss account, increases it to £116,870. The sum written off for depreciation is £14,034, leaving a balance of £102,836, which is carried forward to next year's accounts. As stated in last year's report, this credit to profit and loss account is represented to a large extent by the additions which, during the last few years, have been made to the general equipment of the mine and to the property. The debenture debt has been reduced during the year by £7,920, and at the date of the accounts stood at £96,000. It has since been further reduced to £94,125. The revenue from the company's estate under the headings "licences, rent, etc.," shows a slight increase, and totals £11,368. In the last directors' report it was stated that at the beginning of the financial year covered by the present report, important changes were made in connection with the management of the property and the general administration of the company. Mr. C. B. Saner was appointed general manager and Mr. J. Andrew Cohen chairman of the newly-constituted local committee. The present report covers the first eleven months of the new administration, and the directors are pleased to state that results have fully justified the policy which they have adopted. The change has brought about greater economy, increased efficiency and a substantial improvement in profits. These results are reflected in the cash position of the company, and will enable the Board to carry out the proposed enlargement of the reduction plant out of accumulated profits. 196,780 tons of ore were crushed, being at the rate of 9·816 tons per stamp per working day. The average grade of ore sent to the mill was 5·308 dwts. per ton, as against 4·651 dwts. for the previous year, and the total recovery was 94·23 per cent. of the gold contents, as against 93·18 per cent. for the previous year. The yield from all sources was 20s. 11·967d. per ton crushed, comparing with 18s. 2·015d. for the previous year. (For the purpose of exact comparison, yield and cost of treatment of the accumulated slimes, which became exhausted in February, 1912, have been excluded from last year's figures.) The general manager attributes the improvement to cleaner mining, greater use of hand labour in stoping, and closer underground and surface sorting. The working expenses, which include a development redemption charge averaging 2s. 9·918d. per ton crushed, were 18s. 4·259d., as against 17s. 1·427d. per ton for the previous year. Of the increase 1·728d. is due to advance in native wages, native feeding and housing charges; 4·197d. to the company's contribution to the phthisis insurance and compensation funds, and the balance to general renewals and repairs, which are entirely charged to working costs. Of the ore milled, 49·15 per cent. is from the East (Windsor) section, 49·76 per cent. from the Western section, and 1·09 per cent. from the Battery reef. Of the ore mined 66·99 per cent. came from the Main Reef, 23·95 per cent. from the South Reef, 0·97 per cent. from the Battery Reef, and 8·09 per cent. from development. The footage accomplished for the year in driving, raising, sinking and crosscutting totals 8,941 ft. and in excavation 3,174 cubic ft. The cost of development during the year has been more than covered by the amount charged against working expenses for development redemption. A considerable amount of work has been done in re-opening the old upper levels in the Windsor section, and good values have been disclosed. In view of the favourable results obtained on the Battery Reef by the West Rand Consolidated Mines, Ltd., careful study is being made of this reef, both in the western and eastern sections of the company's property, and recent developments are of an encouraging nature. The payable ore reserves at 30th June last were estimated as follows:—Fully developed: 581,795 milling tons of an average assay value of 5·51 dwts. per ton. Partially developed: 91,819 milling tons of an average assay value of 4·70 dwts. per ton. In view of the satisfactory position of the ore reserves, the general manager recently advised the erection of two additional tube mills, which will have the effect of increasing the crushing capacity from 16,500 tons to about 21,500 tons per month. The cost of this new equipment, including erection, etc., is estimated at £11,200. The orders for the tube mills have been placed, and although there has been some delay owing to the disorganisation following the miners' strike in July last, it is expected that the new plant will be in operation in the spring of next year.

The following letter is published in the "Government Gazette" in terms of Section 22 Sub-section (b) of Act No. 35 of 1908 (Transvaal):—"The Manager, New Lisbon Berlyn, Ltd., Frankfort, P.O. Pilgrims Rest.—Sir,—In terms of Section 22, Sub-section (b) of the Precious and Base Metals Act, I hereby demand payment at my office of the sum of fifty pounds sterling (£50), being amount due in respect of mynpacht No. 614, the sum of twenty-five pounds (£25), being amount due in respect of mijnpacht No. 615, and the sum of eighty-three pounds sterling (£83), being amount due in respect of mijnpacht No. 616; mijnpachten Nos. 614 and 616, situated on the farm Lisbon No. 9, and mijnpacht No. 615, situated on the farm Berlyn No. 458, and all registered in the name of New Lisbon Beryn, Ltd., for the year beginning 1st May, 1913. In default of payment of these amounts within three months after publication of this demand in the *Union Gazette*, the mijnpachten will be declared cancelled.—W. Wagner, Mining Commissioner."

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A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

V.—LIVING CONDITIONS AT MESSINA—RESULTS SECURED BY THE COMPANY TO DATE—A BRIGHT OUTLOOK.

WHILST the owners and management of the Messina Mine have achieved wonderful work in regard to developing and equipping the property they have not been too busy to give the treatment and comfort of employees very full and thorough consideration. The general layout of the camp—one will soon have to speak of it as a town or township—is admirable. The concentration plant, power plant, headgears, etc., stand on a high ridge. Just to the south of this are the offices and the manager's house, and south of these again are a number of well-built brick houses for officials and married employees. These houses are all netted in with fly-proof and mosquito-proof netting, and each residence has a garden, in many of which all kinds of sub-tropical plants are flourishing. The single men's quarters are also well built and laid out with a view to effective ventilation. There is a large boarding house and quite comfortable hotel on the the property, and leisure hours of the Messina inhabitants are well served by a large concert, bioscope and dance hall, also a recreation building, which includes a billiard room, library, reading room, etc. There are tennis courts, golf links, and a swimming bath, and it may be mentioned that an ice-making plant and large vegetable garden, maintained by the company, and which all employees may benefit from, are further concerns which improve the lot of the Messina Mine worker. There is also a Post Office and Police Station at the mine, but the inhabitants of Messina are reputed to be very law-abiding, and the Police find larger calls on their services in the neighbouring country than at the mine itself.

TYPICAL EMPLOYEES' HOUSES AT MESSINA.

HEALTH.

The health of the mine is good. In the earlier days of the camp malarial fever was naturally far from rare, but with the establishment of the mine and the obtaining of better transport facilities, which have enabled the management to equip the houses with mosquito-proof netting and in a thousand and one ways to improve the conditions under which employees live, there has been a steady diminution in the sickness rate. There is a resident doctor at the mine, and there have been built large and well-equipped hospitals for both whites and blacks. In so far as whites are concerned, most of the cases that come into the hospital are non-employees of the company—hunters, prospectors, or wood cutters from all parts of the district. The company has in the past looked after a number of these unfortunates and has brought them to recovery. It seems grossly unfair that the Government should not contribute towards the upkeep of the company's hospital, since it has been more of a public than a private institution in the past. The employees of Messina seem to be quite contented with their lot, and the impression gained by a visitor to the property from the Rand is that there is none of that feeling of uncertainty and dissatisfaction which is, or has been, so noticeable along the Main Reef series. During the recent labour disturbances on the Witwatersrand Messina was unaffected, and throughout the strike the employees worked on quite unconcerned with events on the Rand.

PRODUCTION TO DATE.

Having now described the mine, the ancient and modern workings on the property, the concentration and smelting plants, and the general housing arrangement on the mine, some consideration may be given the financial and productive results secured by the company to date. In the first place the ore milled by the Messina Company had, up to the end of June last, amounted to 98,736 tons. The average assay value of ore treated during this period was 10·8 per cent. copper and the total concentrate produced was 14,463·4 tons of an average value of 50·9 per cent. copper. Outputs year by year have been as under:—

Year.	Ore Milled. Tons.	Concentrate Produced. Tons.	Average Assa Per Cent. of Copper
1906	476	280·0	66·0
1906-1907	2,967	768·5	60·6
1907-1908	5,183	1,148·8	58·3
1908-1909	15,011	2,240·2	52·3
1909-1910 ...	23.578	2,758·3	50·0
1910-1911	18,573	2,503·4	50·8
1911-1912	10,347	1,162·1	49·8
1912-1913	22.601	3,602·1	45·8

WHERE THE ORE CAME FROM LAST YEAR.

The ore tonnage mined and milled last year, less about 20 per cent. of waste rock sorted out was 22,601 tons, and the sources from which this was derived were:—2nd level, 4,258 tons; 3rd level, 5,006 tons; 4th level, 7,255 tons; 5th level, 3,359 tons; 6th level, 453 tons; 7th level, 1,155 tons; 8th level, 1,115 tons. The Bonanza section contributed the greater proportion of the ore mined and of the total tonnage 6,096 tons were obtained from development and 16,505 tons from stoping. The output statement for the year ending June last shows that 22,601 tons were milled and that 3,602·11 tons of concentrate were produced, of an average assay value of 45·8 per cent. copper and a total copper content of 1,652·42 tons. In addition, 2,591 tons of jig middlings were produced, having an average assay value of 11·6 per cent. copper. This product has been stored for future treatment. The stock of middling on hand at the end of June amounted to 9,422 tons, estimated to contain 13·4 per cent. copper. It is proposed to treat all this accumulated product by re-grinding and smelting, and it is estimated that these middlings when re-treated and shipped will yield a profit of about £33,000.

COSTS AND PROFITS.

The cost of production of a ton of concentrate at Messina has naturally declined as the property has become more established and developed and better transport facilities have been available. Last year the total expenditure at the property for mining and milling 22,601 tons of ore was £36,896, equal to 32s. 8d. per ton. The cost per ton of concentrate is given at just over £16. This represents a decrease in cost, compared with the previous year, of £6 4s. 10½d. per ton of concentrate and is due mostly to the larger tonnage produced and lower transport charges. As the property is further equipped and exploited there will, of course, be further reduction in cost. The total expenditure on development up to end of June stands in the books at £56,430 17s. 1d., equivalent to an average cost of 4s. 10d. per ton of ore developed. For the ore mined during the past year the company allowed 10s. per ton for development redemption, but this figure will now be readjusted to 5s. per ton, chargeable in working costs. Approximately 100,000 tons of ore have been extracted since start of operations. The ore reserves calculated as developed and available for stoping purposes at 30th of June last amounted to 230,000 tons, estimated to have an average assay value of about 10 per cent. copper. The probable ore, that is, partially developed but not yet properly defined, is estimated at 148,000 tons; and for possible ore, keeping the limit to a reasonable depth of 1,000 feet, or 100 feet below the present workings, another 100,000 tons have been allowed for. The transfer of probable ore to ore reserves has been made during the year according to the stage of development operations, and it is gratifying to note that former estimates in this respect have been practically verified by actual disclosures in driving, winzing and stoping. Although the company has engaged in active development operations during the past year, at the same time there has been maintained a good output of ore from No. 4 shaft. The sale of concentrates realised the sum of £93,786, and the profit derived therefrom amounted to £29,734. This substantial sum may be regarded as a forerunner of what the company should be able to accomplish, when the new concentrating and other plant is in full working order. When working on the large scale provided for, and treating 10,000 tons of ore per month, it is estimated that the Messina Company will make a profit of over £214,000 per annum, basing estimates on best selected copper at £68 15s. 0d. per ton; with railway connection completed between the mine and Delagoa Bay. Calculating on this basis, the 230,000 tons of ore reserves should yield a profit of about £412,000. Of course, the market price of copper is the uncertain factor which governs the position to a great extent, and while working costs and other charges remain practically constant, the fluctuations in the price of copper, when shipments are realised, affect the profit one way or another.

OPENING UP VOGELSANG.

The outlook for the company is undoubtedly a bright and encouraging one. The railway is practically at the mine, and the new concentrator and smelter plants are giving every satisfaction. As to development, the disclosures in depth, as already stated, are thoroughly satisfactory, whilst the outlook for large additions to reserves by lateral development is very good. In this latter connection it is important to learn that preliminary development operations have just recently been commenced on the farm Vogelsang, which adjoins Berkenrode, where the Messina mine is located, on the west. On Vogelsang there are extensive and promising ancient workings, and it is probable that another highly important mine will be opened up there.

MINING MEN AND MATTERS.

Sir George Albu and Mr. E. A. Wallers have returned to the Rand.

* * * *

The competitions for the "Dewar" and the "Rathbone" Shields, under the auspices of the St. John Ambulance Brigade Division, takes place to-day.

* * * *

The annual dinner of the Chemical, Metallurgical and Mining Society of South Africa held last Saturday night was, as usual, a most successful function. Mr. A. Richardson, the president of the Society, was in the chair. The Mayor (Mr. Norman Anstey), Mr. F. D. P. Chaplin, Col. Dalrymple, and Mr. J. Munro (chairman of the Chamber of Mines) were among those present. The success of the evening was mainly due to the efforts of the Secretary, Mr. F. Rowland.

Swaziland Tin.

The following are the particulars in regard to operations for the month of October, 1913:—Concentrates recovered, 25·027 long tons; estimated profit (taking the price of tin at £175 per ton), £742. Very short of native labour.

Rose Deep.

At this mine a profit of £70,917 was made during the quarter ended September 30. The reef disclosures were as follows:—Main Reef: Distance exposed, 685 feet; width, 37 inches; assay value, 24s. 4d. Main Reef Leader: Distance exposed, 915 feet; width, 25 inches; assay value, 26s 5d. South Reef: Distance exposed, 353 feet; width, 18 inches; assay value, 53s. 9d. Development work, working costs and profits have been seriously affected by the severe shortage of native labour. Of its complement of 5,451 natives, only 3,586 were in the service of the company at September 30, or 1,285 less than at June 30. The footage of development work sampled exposed reefs of normal value. The dismantling of the old headgear at No. 2 shaft is practically finished. The new headgear is connected up with the bins, and new tipping gear installed. Sand filling operations have been suspended temporarily to enable the sinking of No. 1 vertical shaft; the sand is well up on both sides of the incline and no trouble is now anticipated in this area from moving ground. In October a movement of ground and falls in the workings north of No. 3 shaft occurred, necessitating the temporary suspension of work in this section of the mine. It is not anticipated that the tonnage crushed will be reduced on this account. The amount expended on capital account was £1,275, and it is estimated that a further sum of £5,697 will be required to complete work at present in hand.

ADVERTISER seeks situation on Reduction Work on small property in outside district. Amalgamating, Cyaniding, Smelting, etc. Can undertake all erecting work on small plant. Experienced with Suction Gas Plants—running and erecting.—Reply "Extraction," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The New Mining Regulations.

To the Editor, *South African Mining Journal.*

Sir,—After reading the article which appeared in the *Mining Journal* of the 15th inst., it occurred to me that the point of view of that unfortunate individual, the shift boss, might be of interest to some of your readers. There can be no doubt that many of the amendments have been inserted to secure convictions against mine officials. Take for instance Regulation 161 (9), which reads:—" Each shift boss shall at the end of the shift pay special attention to the requirements of Regulation 106 (32) and shall be deemed guilty of a contravention of these Regulations should the said requirements be not strictly carried out by any ganger or miner within such shift boss's section." Regulation 106 (32) says that no man may go back after having blasted until 30 minutes after water blast has been put into operation. I should like to know how, in the name of common sense, I can, under these Regulations, charge a miner with contravention of 106 (32) without incriminating myself? Again take Regulation 61 (5), which says the shift boss must note any unsatisfactory conditions then and there, in his note book. This is nonsense; any sensible man will " then and there " set about rectifying the " unsatisfactory conditions " and never mind collecting evidence against himself in case of an accident. Also I would like to point out at least one discrepancy, easily seen by placing two Regulations side by side.

100 (9b). In any mine other than a fiery mine no person shall drill or cause to be drilled any hole in any drive, crosscut, winze or raise or *on any bench in a stope* where a misfired hole is known to exist until such misfired hole has again been blasted.	106 (14). A ganger or miner shall cause every drill hole to be bored not nearer to a socket of a hole *or a misfire* than 12 inches and to be given such a direction that it cannot come nearer to such socket or misfire or the line of direction thereof than 12 inches.

Comment is needless! One more thing and I am done. The miner is protected in every conceivable manner even against himself, but although I can find many pitfalls for the shift boss I have not found any single one affording him any protection whatever. He has to serve two masters, the Mine and the Law, and although the latter does not pay his salary it is rapidly becoming the more exacting of the two.—I am, etc.,

SHIFT BOSS.

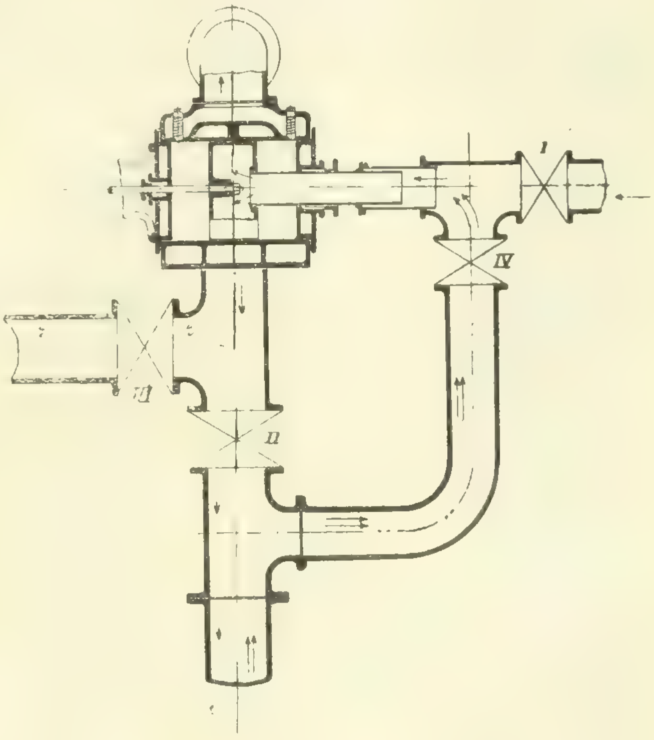
Roodepoort,
20th November, 1913.

[This letter is dealt with under Notes and News.—Ed.]

The Dust Question: A Possible Solution.

To the Editor, *South African Mining Journal.*

Sir,—In regard to the everlasting dust question, we are told that " a particularly serious and difficult matter to remedy is the large amount of dust created by blasting." It is also stated that " it frequently happens that blasting takes place before all persons on the outgoing shift had been hoisted; that it is impracticable to hoist all persons in the downcast shaft; and that the persons actually doing the blasting are unable to get away from the resultant fumes and dust." " Now that dust at other mines has been done away with by the abundant use of water the deplorable conditions just mentioned are the chief remaining cause of phthisis." Had we been less wedded to one method, and one only, for the control of dust, " these deplorable conditions " would have ceased to exist long ago. Why should we turn on the compressed air and force the fumes and dust to the stations " before the persons on the outgoing shift had been hoisted "? If this deadly dust and fumes were forced out of the mine we should have little to complain of. Instead of this the dust settles on the roof, sides and floor of all the drives, stopes, old working places and all objects therein. When the following shift begins this dust again becomes suspended by the vibration set up by rock-drilling, tramming, shovelling, etc. If the dust was confined to the immediate vicinity of its place of birth we might then have hopes of allaying it by means of water sprays or jets. Can this be done? As the methods in vogue seem to have reached finality we must make a radical departure therefrom if we wish to find a solution. If—whilst blasting and between shifts—we *reverse* the action of the air compressor the deleterious gases and " that very fine dust which gives rise to phthisis " will be drawn immediately out of the mine instead of being forced into " the open spaces which will act as storage reservoirs." The gases generated by blasting will, by expansion, travel a distance beyond the ends of the air pipes, but will immediately contract and by the *exhaustive* action of the air compressor return to the working faces, into the air pipes and through these to the surface. It is almost superfluous to add that the dust not caught by damp surfaces will also be returned towards the faces, where it will occupy comparatively small areas in which it will encounter a plentiful supply of water in the form of jets or sprays. Engineers will not welcome the idea of " that very fine dust produced by blasting, and which gives rise to the dreaded disease—phthisis " passing through the air pipes and into the compressor. If, however, the receiver is modified to act as a dust trap the abrasive action of the very fine particles of silica will be found to be not more than we have at present from surface dust passing through the compressor. To reverse the action of the air compressor, I do not mean to add link gear, but simply to alter the inlet and outlet at will, so that it can receive air from the mine instead of the surface. The accompanying sketch shows one method of accomplishing this with an Ingersoll compressor. (A fan



connected to a bye-pass on the compressed air main will be as effective, but will add considerably to the initial cost.) If the system outlined above proves efficient in practice we may expect the following advantages to accrue therefrom:—The necessary alterations may be made to existing machinery with very little expense; cost of upkeep will be practically nil; dust will be confined to small areas, where it will be controlled by water sprays, before the oncoming shift enters the mine, and it cannot reach the stations unless from working places near the shafts; the "round" may be blasted shortly after the "cut," as the miners will not have to return through hundreds of feet of tunnel or winze filled with deadly gases. Gassing accidents in winzes, raises and drives will be things of the past. The adaptability of the system to all forms of development work would be one of its strong points, and as the Mines Department is satisfied that the dust danger has practically been reduced to vanishing point, we need not give much thought to this class of working place. Details such as uncoupling manifolds and putting on couplings with strainers, etc., will suggest themselves to those giving the system a trial.—Yours, etc.,

W. LACEY.

West Rand,
November 25th, 1913

Note.—During ordinary working of compressor the valves I. and II. will be open and III. and IV. closed (see sketch). To reverse air current close I. and II. and open III. and IV. In this case the air from the mine will travel in direction indicated by double arrows, the mine air and gases being conducted through an extension of pipe from valve III. to top of engine-room or headgear.—W.L.

S.W. Transvaal Diamond Diggings.

Details of the diamonds found at 39 different localities in the South-Western Transvaal during the month of October show a total of 5,625 carats, value £21,655 1s. 6d., a decrease of £4,300 upon the value of September's finds. Not since August, 1911, has the total touched so small an aggregate, while it may be recalled that in January of last year Mooifontein alone, with 4,475¾ carats, value £21,701 3s., exceeded the total value of last month's output, which was as follows:—

	Carats.	Value.
Bloemhof	1,514½	£6,164 13 6
Dievedraai	651½	3,020 0 0
London	391¾	1,700 17 6
Eerstebegin	469	1,632 12 6
Eastleigh	426½	1,481 17 6
Rietput	246½	1,168 3 0
Kameelkuil	305¾	1,008 10 0
Koppiesvlei	295	695 5 0
Mooifontein .	210¾	671 17 6
Zwartlaagte ...	108½	556 10 0
Avondster	165½	516 17 6
Panfontein	178	501 12 6
Kareepan 137 ..	101¾	357 10 0
Christiana	85¼	294 15 0
Maroetjesfontein ..	64¼	275 17 6
Goedgenoeg	50	178 7 6
Kuilfontein	35½	147 10 0
Diamantdoorns .	24½	130 0 0
Schweizer-Reneke ...	46¼	126 2 6
Rondevlei & Doornbult	36½	126 0 0
Goedgehoep	17¼	114 10 0
Modderkraal	13¼	108 0 0
Vechtvallei	26	101 0 0
Biesjeslaagte	23¾	75 10 0
Kromellenboog	13¼	75 2 6
Grootdoorns	21	63 0 0
Vuurfontein . ..	12	51 15 0
Kareepan 161 . .	11¾	42 0 0
Naauwpoort	12	39 10 0
Olivenfontein	11	28 10 0
Katboschfontein .	12	25 0 0
Vanaswegenshoek	6	22 0 0
Vaalpoort	4¾	20 0 0
Grootpoort	5	17 0 0
Zoutpansdrift	1¾	3 10 0
Matlabanstad	3¼	3 0 0
Klipplaatdrift . . .	4¾	2 10 0
Matjesspruit	1	1 5 0
	5,625	£21,655 1 6

The returns for the ten months of the year have been as follows:—

	Carats.	Value.
January . .	7,105	£40,381 1 0
February	7,695½	43,063 6 0
March	8,917¾	49,805 19 6
April	7,416	42,951 9 9
May	9,355⅝	58,472 3 0
June	7,252⅛	43,735 18 0
July	7,735	39,843 11 0
August	7,467⅝	33,344 12 6
September	6,828⅝	25,957 5 0
October	5,625	21,655 1 6
Total	75,496⅞	£399,210 7 3

The results of sanitary measures in minimizing the effect of malaria and other diseases in the Panama Canal Zone are justly famous, and while the economic benefits of working under healthy conditions are well recognized, it is often supposed that the elaborate methods adopted on the Canal are too expensive for industries working on a smaller scale in remote situations and with limited capital. In the *Scientific American*, September 15th, 1913, Dr. J. H. Verloop outlines the results obtained in a successful attempt to decrease malarial sickness on the Guiana placer mine in Dutch Guiana. The methods adopted started on the principle that the mode of life would have to be radically altered. The large extent of surrounding swamp and drowned forest made chemical prophylaxis impossible, and the removal of quarters to a more favourable situation would have been too expensive. For that reason, only the immediate vicinity was kept clean. The houses were built to be light and airy and protected against mosquitoes with gauze in every possible way. The beds were covered with curtains of a special construction and the houses connected by passages also covered with gauze. Supper was taken early and recreation provided so that there was no temptation to leave the quarters in the evening. Special efforts were made to interest the staff in the observance of hygienic laws. Thus, in cases of ordinary sickness, the employees received a higher benefit wage than if stricken with malaria or other preventable diseases. There was also a premium paid for mosquitoes caught indoors. The result was that everybody watched results with interest and enthusiasm. The cost of surplus wages and salaries and of the gauze for the protection of the building was a low premium to pay for insurance against disease. While the overcoming of naturally careless habits necessitated the exercise of a great deal of will-power, the results were well worth the efforts. The health of the twelve to eighteen Europeans was largely improved and malaria was no longer greatly dreaded. The company reaped the benefit of steady work under less disturbed conditions.

FOR SALE.
COMPRESSING PLANT, by WALKER BROS., WIGAN.

Steam Cylinders, 30in. and 50in.; Air Cylinder, 29in. and 44in. by 5ft. stroke.
Piston Rods, 5¼in. diameter, steam; Air, 4¾in. diameter; Crank Pin, 7in. by 9in.
Intercooler, having about 850 square feet of brass tubes for water circulation.
Slide Valves on Steam Cylinders, with Meyer Expansion Gear.
Air Cylinders, Cast Steel Valves, of the Walker Higged Gear.
Bedplates of Box Section, with Adjustable Pedestals for support of Crank Shaft.
"Jet" Condenser, with Brass Fitted Edwards' Air Pump, 28in. diameter by 28in. stroke, this being driven through Bell Crank Level from Tail Rod behind L.P. Air Cylinder in conjunction with Circulating Pump, 12in. diameter by 24in. stroke, for supplying water for Intercooler and Air Cylinder Jackets.
Steam Pressure, 70/80 lbs. per square inch.
Air Pressure, 70 lbs. per square inch.
Apply, DARNGAVIL COAL CO., LTD.,
124 St. Vincent Street, Glasgow, Scotland.

THE GOLD FIELDS' YEAR.

Mr. Leslie's Report—Underground Health Conditions Discussed—Labour-Saving Appliances—The Scope and Functions of the Resident Mechanical Engineer.

In his report on the operations of the various companies connected with the Consolidated Gold Fields group in the Transvaal for the twelve months ended July 31st, 1913, Mr. C. D. Leslie, the superintending engineer in the Transvaal, writes that the mines of the group milled 3,978,882 tons of ore, yielding £3,936,596, of which £2,766,577, or 70·3 per cent. was absorbed in working expenditure and £1,170,019, or 29·7 per cent. went to profit. During the preceding year the profit was £1,304,143. The yield per ton milled was decreased by 2s. 2·365d. to 19s. 9·449d., and working costs by 10·389d. to 13s. 10·875d. An important feature of Mr. Leslie's report is that dealing with underground working conditions. On this subject he writes:—

Marked attention is directed towards improving health conditions and combating occupational diseases, which became noticeable in Rand mining partly on account of its magnitude, in like manner to which the prevalence of tuberculosis, influenza and other diseases became apparent in big cities and factories where the conditions of living are unsatisfactory and large masses of people are affected. The conduct of the mines of the Witwatersrand seems to be a never-failing subject for hostile comment, and it may be difficult to convince our critics that the thoroughness of the organised attention being given to the understanding and stamping out of miners' phthisis (silicosis) on these fields deserves praise, and might be applied with advantage in dealing elsewhere with this as well as with other diseases which are much further reaching in their destruction of human life. Whereas in July, 1912, tests showed the average amount of dust in typical working places in the Simmer and Jack mine to be 20 milligrams of mineral dust per cubic metre, in June, 1913, this had been reduced to an average of 2·2 milligrams. Similar tests carried out in the Robinson Deep in 1912 showed mineral dust in the mine air amounting to an average of 28 milligrams per cubic metre, whilst in June, 1913, the average figure obtained was only 2·1 milligrams. The amount of dust present in upcast air from the Simmer Deep mine was measured at the top of the shaft both before and after general spraying was introduced underground. These measurements proved conclusively that the introduction of sprays and water jets in the underground workings had a marked effect on the amount of dust in air circulated through the mine, as will be seen from the following figures:—

Time.	Sept., 1911. Without sprays. Milligrams. Total Dust. (Mineral.)	April, 1912. With sprays and wetting. Milligrams. Total Dust. (Mineral.)	Sept., 1912. With sprays and wetting. Milligrams. Total Dust. (Mineral.)
9 a.m. to 10 a.m.	280·0	32·0	3·3
11.30 a.m. to 12.30 p.m.	130·0	21·0	0·2
2 p.m. to 3 p.m.	80·0	39·0	2·1
*4.15 p.m. to 5.15 p.m. ...	100·0	14·0	17·1

*On this mine, which operates underground only on day shift, all work ceases after blasting at 3.15 p.m.

Probably the most important means for decreasing expenditure on the mines of the Rand and also for giving security for continuance of the present scale of working would be found by saving native labour, not only by mechanical replacement but also by closer organisation to prevent overmanning at any point. The figures taken from the Chamber of Mines returns for December last show that if the number of natives employed for the total tonnage milled on all your mines be taken as a correct basis for the other mines of the Witwatersrand, these other mines could dispense with 11,526 (=31·27 per cent.) natives engaged on surface employment and 48,829 (=35·88 per cent.) natives engaged underground, or a total of 60,355 natives (=34·9 per cent.). In the future the engineer will figure prominently in the mechanical replacement of native labour, and the mines of this group are fortunate in having resident mechanical engineers with wide experience, who are keenly interested in their work. The efficient manner in which the plants are kept in continual operation testifies to the vigilance and skill with which the intricate machinery is attended to, and it is apt to be forgotten to what extent the mines are indebted to the unrelaxing efforts of the mechanical engineer and his skilled assistants. During the year many minor methods of labour-saving were successfully adopted, and mention should be made of the efforts of the manager of the Knights Deep (Mr. G. A. Chalkley) and our assistant consulting mechanical engineer (Mr. G. H. Kirsch) directed towards perfecting detachable bits for rock drilling. There is renewed prospect of success with detachable drilling bits, partly on account of improvements in the design and manufacture of rock drilling machines. Notwithstanding many reverses, there has been considerable progress in establishing tangible evidence to support the belief that eventually much of the drilling work, as now performed by natives, will be accomplished more successfully by the use of machines. The mechanical engineering department of this group is devoting much attention to labour-saving devices and also to the economic upkeep and running of plant, as well as to construction work that will necessitate expenditure on maintenance and renewals in the future. The comparative statements compiled and circulated to the mine managers help to draw attention to points which call for investigation, in the attempt to procure the most favourable results on each mine according to its conditions. With the exception of the breaker station at Knights Deep, which was converted from steam to electric drive when the new station was erected, all the steam-driven plant in use during the preceding year remains in commission, but has a greater burden placed upon it due to the larger scale of operations. Nevertheless, the bill for steam coal which, for the year ended 31st July, 1912, was £134,796, equal to 8·9458d. per ton of ore milled, was brought down, for the year ended 31st July, 1913, to £114,344, equal to 6·8971d. per ton, a difference in the cost per ton milled of 2·0487d., or a total of £33,965. Of this amount, £16,916 represents the saving due to the reduction in freight which came into force on 1st August, 1912. The group steam power costs for the year ended 31st July, 1913, amounted to £300,072, and purchased electric power for the same period to £146,887, making a total power bill of £446,959. Compared with the previous year, the electric power bill showed an increase of £18,000, attributable to new installations of electric plant and increased use of electric power in plant previously erected. Closer supervision of ore treatment work has resulted in further economies in many minor details of the operations, and at the present time special attention is being paid to utilising existing appliances to the fullest advantage both in efficiency and economy. These improvements have their results reflected in the decreased total cost of ore treatment operations which averaged for our mines, 3s. 3·781d. per ton for the three months April to June, 1913, as compared with 3s. 6·778d. per ton for the corresponding period of 1912, and with 3s. 9·8d. and 4s. 4·0d. per ton respectively for the other mining companies on the Rand. In the above costs are included all expenditure on breaking and sorting, stamp and tube milling, cyanide treatment and residue disposal. Of the 257 white men, apart from learners, emplyoed on an average during 1912 in our companies' reduction works, only 14 (5·4 per cent.) men were dismissed, while the voluntary resignations were 28 (10·8 per cent.), so that the average length of service comes to over six years per individual. Each mine takes useful advantage of the well-equipped and efficiently staffed laboratory. The main features of the work there comprise the preparation of specifications for the purchase of mine supplies; examination of foodstuffs; supervision of the routine work of mine assay office and reduction works testing; the whole of the assay work for the Simmer Deep and Jupiter Companies, and periodical check assays for other mines; examination of metallurgical, engineering and mining supplies; examination of boiler feed water purification to secure efficiency in the use of the chemicals used, and checking of steam-raising operations by testing of coal, ash and flue gases as required by the mechanical engineering department; testing of air underground in regard to temperature, gases and dust; and checking the neutralisation of acid mine water and the destruction of cyanide in sand residue pulp sent underground for filling worked-out areas. On account of the unusually low rainfall of the last two years, there was danger of shortage of water, and to safeguard the position the Rietfontein Pan was linked up with the existing water service to your mines in the Germiston district. In addition a dam wall is being built across the Jupiter water-right, and arrangements are nearly complete for centralising and pumping all water from the underground workings of the Simmer and Jack, Knights Deep and Simmer Deep mines. The question of sorting has been the subject of considerable attention during the past year. On our very low-grade mines, such as the Simmer Deep and Jupiter, returning a small percentage of sorting, there may be some advantage in dispensing with sorting operations and the considerable expense attached thereto, on account of the small profit which would result from the treatment of the tonnage discarded as waste rock, but which is by no means barren of gold. On the Knights Deep mine, where the gold is disseminated over considerable widths, loss through sorting was definitely proved, and therefore the whole tonnage hoisted is now sent direct to the mill. In the course of investigations on the subject of sorting, it was shown that there was some tendency to over-estimate the percentage sorted, and partly on this account it was decided for the future to estimate the tonnage and value of ore reserves on a basis of mine, or unsorted, tons, instead of on the previous basis of mill, or sorted, tons.

Nourse Mines.

The profit earned in the Nourse Mines during the quarter ended September 30 was £57,406, or 8s. 2d. per ton. The reef disclosures were as follows:—Main Reef: Distance exposed, 735 feet; width, 42 inches; assay value, 35s. 11d. Main Reef Leader: Distance exposed, 1,360 feet; width, 21 inches; assay value, 61s. 9d. South Reef: Distance exposed, 1,925 feet; width, 26 inches; assay value, 49s. A considerable falling-off in the supply of native labour followed the industrial troubles recorded in the report for the quarter ended 30th June, and is responsible for the decrease in the footage of development work done, ore crushed, and decrease in profits. On 30th September 3,500 natives were in the employment of the company out of an allotted complement of 5,680. The wastage during the quarter amounted to 1,034. Shaft sinking progressed satisfactorily. The west incline is below the plane of the 20th level, and will be connected shortly with the drive from the South Nourse section. The connection between the east incline shaft and this section has already been made and the haulage in the drive is working. The expenditure on equipment account was £622, and £5,680 will be required to complete the work in hand.

QUARTERLY REPORTS.

Consolidated Gold Fields Group.

The following quarterly reports show summaries of operations at the producing mines of the Gold Fields group for the three months ended the 30th of September:—

SIMMER AND JACK.

Number of feet developed and sampled, 284; reef width, 20·6 inches; reef value, 15·5 dwts.; tons milled, 194,300; total yield of gold, 47,464·54 ozs; revenue from gold, £199,434; sundry revenue—rent from accumulated slimes leased, £1,103; working expenditure, £118,571; working expenditure per ton, 12s. 2·459d.; working profit for the quarter, £81,966; profit per ton, 8s. 5·244d.; appropriations for additions and renewals fund, £5,625; appropriation for shaft sinking, £1,098; miners' phthisis fund, £1,814; profits tax, estimated, £6,435; Government annuity for bewaarplaatsen, nil; net profit, estimated, £72,551. The amount spent during the quarter chargeable to additions and renewals was £15,320. Included in the above expenditure on additions is an amount of approximately £13,500 expended on a water supply for this and the other companies of the Consolidated Gold Fields group. The prices at which other companies have agreed to take water from this company have been fixed at a figure which will ultimately reimburse this company for its initial capital outlay. Operations were seriously affected by the miners' strike, which took place early in the month of July. Though the stoppage in the reduction plant during the actual strike period amounted to only 3·837 days, the loss in native labour which ensued reduced the average number of coloured labourers for the quarter by 333=10·256 per cent. less than during the preceding quarter, the tonnage treated being reduced by 16·069 per cent. At the 30th of September there was gold in reserve of 1,725 ozs., as compared with 1,750 ozs. at the 30th of June.

ROBINSON DEEP.

Number of feet developed and sampled, 3,821; reef width, 23·6 inches; reef value, 14·1 dwts.; tons milled, 158,100; total yield of gold, 51,845·638 ozs.; revenue from gold, £217,817; sundry revenue—rent from accumulated slimes, interest, etc., £2,055; working expenditure, £130,917; working expenditure per ton, 16s. 6·736d.; working profit for the quarter, £86,899; profit per ton, 10s. 11·916d.; appropriation for additions and renewals fund, £6,250; miners' phthisis fund, £2,110; profits tax, estimated, £5,944; Government annuity for bewaarplaatsen, £8,589; net profit, estimated, £65,677. A sum of £84 10s. was appropriated for shaft sinking. The amount spent during the quarter, chargeable to additions and renewals, was £3,153. Operations were seriously affected by the miners' strike, which took place early in the month of July. Though the stoppage in the reduction plant during the actual strike period amounted to only 104 hours, equal to 4·3 days, the loss in native labour which ensued reduced the average number of coloured labourers for the quarter by 612, equal to 14·974 per cent. less than during the preceding quarter, the tonnage treated being reduced by 12·604 per cent. On Saturday morning, 20th September, the descending skip in No. 1 vertical shaft jumped the guides and seriously damaged about 60 feet of the shaft. The necessary repairs were completed and hoisting resumed on Friday, the 26th September. Bewaarplaatsen deposit account is as follows: Total amount of deposits, plus interest at 30th June, as shown in quarterly report for quarter ended 30th June, £77,609; further amounts deposited during current quarter (as above), £8,589; interest accrued during current quarter, £797; total, £86,995; less third annuity paid to Government on 30th September, £28,998; total amount of deposits at 30th September, plus interest which has been capitalised as at that date, £57,998; balance of annuities still due, £202,986. At the 30th of September the gold in reserve was 1,656 ozs., as compared with 1,571 ozs. at 30th June.

SIMMER DEEP.

Number of feet developed and sampled, 2,519; reef width, 27·9 inches; reef value, 7·6 dwts.; tons milled, 163,100; total yield of gold, 31,405·788 ozs.; revenue from gold, £131,939; sundry revenue—rent from accumulated slimes leased, £2,994; working expenditure, £123,517; working expenditure per ton, 15s. 1·755d.; working profit for the quarter, £8,421; profit per ton, 1s. 0·392d.; appropriation for additions and renewals fund, renewal of machinery, etc., £649; interest charges on debentures, £12,798; net loss, £2,031. The amount spent on additions to plant, buildings, etc., and on shaft sinking was £3,676. In reduction of the expenditure there has been received during the quarter the sum of £4,300 in respect of the sale to the Simmer and Jack Proprietary Mines, of the main pipe line between this company's property and that of the Knights Deep. Operations were seriously affected by the miners' strike, which took place early in the month of July. Though the stoppage in the reduction plant during the actual strike period amounted to only 117 hours, equal to 4·875 days, the loss in native labour which ensued reduced the average number of coloured labourers for the quarter by 724, equal to 17·25 per cent. less than the preceding quarter, the tonnage treated being reduced by 14·18 per cent. During the quarter, £13,300 first debentures have been purchased on the open market at a cost of £12,215, against the drawing due on 1st October. At the 30th September the gold in reserve was 1,000 fine ozs., as against 1,250 ozs. in reserve at 30th June. The Jupiter G.M. Company, Ltd., having recently suspended operations, arrangements have been made with that company for the use of such portions, as may from time to time be required, of its share of the combined ore reduction plant. This additional plant capacity will be brought into commission as and when native labour conditions permit.

JUPITER.

Number of feet developed and sampled, 794; reef width, 25·2 inches, reef value, 7·41 dwts.; tons milled, 93,050; total yield of gold, 22,958·896 ozs.; revenue from gold, £96,499; sundry revenue—rent from accumulated slimes leased, £4,329; working expenditure, £76,082; working expenditure per ton, 16s. 4·235d.; working profit for quarter, £20,417; profit per ton, 4s. 4·66d.; appropriation for additions and renewals fund, £4,449; miners' phthisis fund, £1,750; strike expenditure, £3,158; net profit, estimated, £15,389. At the 30th September there was 850 ozs. of gold in reserve. The following circular was issued to shareholders on the 3rd of October: At the last annual meeting of shareholders, held on 28th March, the Chairman pointed out that, owing to the very large percentage of low grade ore opened up in the mine, it was considered the wisest course to make every preparation to put the company into a position to deal profitably with ore of a mine grade of 4·1 dwts., and to that end the question of increasing the reduction plant to a capacity of 60,000 tons per month was being considered. The board having decided to carry out this scheme, the necessary financial arrangements were made whereby the company would be enabled to borrow up to £50,000. This loan, together with the cash in hand and the profits it was estimated would be made meanwhile by somewhat overcrowding the crushing capacity of the existing plant, was deemed to be sufficient to justify the programme being proceeded with. Tenders for the supply of the plant were called for and actually accepted, when the labour troubles in July broke out. In view of the unsettled conditions following on the strike, and the certainty of shortage of native labour caused thereby continuing for some time to come, the board did not feel justified in proceeding with the scheme, the financing of which was contingent on the assumption that profits would continue to be made in the meantime, while its success was also dependent on the reduction of working costs anticipated as the result of the enlarged scale of operations. The following alternative policies were then given serious consideration:—(1) To continue milling—necessarily on a much reduced scale—in the attempt to improve the yield by extracting ore only from the richest blocks in the mine. The profit result of such ultra-selective mining, however, was not considered sufficiently attractive to justify the adoption of a policy which would inevitably have resulted in depleting the reserves in a comparatively short time of the bulk of the best ore, and would have reduced the remainder to an average value little, if at all, above pay limit. (2) To temporarily suspend milling operations and absorb all available funds for the purpose of proceeding with shaft sinking and development in order to exploit the lower areas. This policy also did not commend itself to the board, in that, failing the facilities for crushing on the contemplated larger scale, the payable tonnage to be opened up would have to be of a considerably higher value than 4·1 dwts. Even if development work and shaft-sinking were practically confined to the richer (Howard) section of the mine, with a view to concentrating stoping, the funds in hand would not be sufficient by a long way to place the mine in a satisfactory position for resuming milling operations on a scale of not less than 40,000 tons per month. On the other hand, money spent in development work in the Catlin section, with the idea of that section contributing a fair proportion to the ore to be sent to the mill, would in all probability be productive of a smaller pay tonnage per foot advanced than that expected from the Howard section. The shortage of native labour is the more severely felt on this mine owing to the peculiar condition of the hanging wall in the eastern section of the mine, which has for some time made it inadvisable to make use of machines to any extent. The narrow margin of profit—averaging 1s. 11d. per ton for the six months ended 30th of June—necessitates the mine and plant being worked to their full capacity, in order to ensure, as far as possible, profitable results. The tonnage which can be produced under the conditions obtaining at present is totally inadequate, and crushing on a much reduced scale could only result in working costs which would render the extraction of ore of the average value of the reserves unprofitable. After mature deliberation, the board has come to the conclusion: (1) That continuance of milling operations is impracticable under present conditions. (2) That the liquid cash in hand, amounting to about £45,000, plus such moneys as could be raised by gradual realisation of other investments, is not sufficient to place the mine in a sound position to restart work on a basis of 60,000 tons per month. (3) That in order to open up both sections of the mine to such an extent as to either feed the mill at the rate of 60,000 tons per month (for which purpose the plant would have to be extended), or, failing an adequate supply of native labour, to be in a position to crush a smaller tonnage of ore of higher value from the richer (Howard) section only, an expenditure of not less than £150,000 would have to be faced. In the circumstances, the board has decided that it is in the best interest of shareholders to suspend all work and to conserve the company's cash resources until an opportunity presents itself to place the mine in a permanently satisfactory position. Considering the large unexploited area of the mine, it is felt that the only way of doing it justice is by the provision of such funds as will allow of a very large payable tonnage being developed in advance of the mill requirements. More settled conditions, especially in regard to native labour, than those obtaining at present, are essential for a successful attempt to ensure profitable results for some years ahead. The profits for August and September were abnormal, as practically no new rock was broken, and the mill was supplied almost entirely with ore and sweepings which had accumulated in the mine. This, coupled with the fact that practically no development was done, explains the abnormal results. In view of the altered conditions referred to in the above circular, it has been decided to discontinue the sinking of the Rhodes shaft of the Simmer Deep.

Rhodesian Section.

LATEST MINING NEWS.

Globe and Phoenix Developments—The Jumbo Mine—Susanna Reef—The Lonely Reef Report—Matabele Queens.

THE following shows the developments on the Globe and Phoenix mine during the month of October, 1913:—11th level drive north on Station reef has advanced 94 ft.; average width of reef, 16 ins.; average value over 30 ins, 6 dwts. 12th level No. 1 winze from No. 1 crosscut east has advanced 19 ft.; average width of reef, 7 ins.; average value over 30 ins., 25 dwts. 12th level No. 1 raise from No. 1 crosscut east has advanced 35 ft.; average width of reef, 12 ins.; average value over 30 ins., nil. 13th level drive south from No. 1 crosscut east has advanced 10 ft.; average width of reef, 4 ins.; average value over 30 ins., nil. 14th level drive south on east portion has advanced 34 feet; average width of reef, 8 ins.; average value over 30 ins., 1 dwt. 14th level drive north from main shaft, prospecting has advanced 28 ft.; average width of reef, 14 ins.; average value over 30 ins., 6 dwts. 19th level east portion, No. 3a winze, has advanced 20 ft.; average width of reef, 28 ins.; average value over 30 ins., 56 dwts. 19th level drive north on hanging wall leader has advanced 11 ft.; average width of reef, 14 ins.; average value over 30 ins., 18 dwts.; next 63 ft., nil. 20th level west portion drive north from No. 2 winze has advanced 66 ft.; average width of reef 6 ins.; average value over 30 ins., 13 dwts. 20th level west portion, No. 2a winze, has advanced 45 ft.; average width of reef, 19 ins.; average value over 30 ins., 3 dwts. Vertical shaft: total depth, 1,486 ft. Crosscutting for the month, 216 ft.

* * * *

The report of the Jumbo Gold Mining Company for the year ended June 30 states that 37,180 tons were crushed, yielding £57,804, as compared with 38,210 tons, yielding £62,995 in the preceding year. Down to September 30, 1913, 9,600 tons were crushed, producing 1,627 ozs. of fine gold; 5,980 tons were treated by cyanide, producing 1,096 ozs. of fine gold; 3,620 tons were treated by slimes, yielding 412 ozs. of fine gold. This makes, since crushing commenced in May, 1906, a total of 123,393 ozs. of fine gold, which has been sold, together with about 32,000 ozs. of silver, for the sum of £525,360. One hundred and sixty debentures of £100 each have been redeemed during the year under review and the further 20 debentures of £100 each shown in the balance sheet as outstanding at June 30, 1913, have since been redeemed. The whole issue, therefore, of £90,000 debentures have now been redeemed and cancelled. The profit and loss account shows a debit of £17,350, which is carried to the balance sheet, making a total debit of £52,953. Development work was re-commenced on a small scale in March last and the result of the four months' work to June 30 is fully described in the consulting engineer's report, which he concluded as follows:—"The present policy is to continue persistently searching for new ore bodies in order to keep the mine running. Depth I do not consider offers a chance, and we now confine work to undeveloped sections, and the possible existence of parallel bodies in the upper levels. It is impossible to state how long the mine can be kept crushing, for to-day your managers, Messrs. R. L. Grey and W. G. Macfarlane, are facing the difficulty of maintaining a grade high enough to be remunerative; they and their staff deserve credit for handling the work efficiently under trying conditions. It must be remembered there are always chances of making new discoveries as long as the mine can work. Twelve months ago it was not considered the crushing could continue as long as it has, and taking everything into consideration, the position at the end of this year is far better than was anticipated."

Mail week's papers contain the following:—Susanna Reef: Auxiliary shaft has been sunk to a depth of 87 ft. At 80 ft. the reef is 8 in. wide and assays 3 dwts.; at 85 ft. 4 in. wide, assaying 36 dwts.; winze 11 to 12 spur reef and south shoot has been sunk to a depth of 65 ft. At 60 ft. reef 45 in. wide assays 9 dwts.; at 65 ft., 54 ins. wide, assays 3 dwts.

* * * *

The following is a cabled summary of the last quarterly report of the Lonely Reef:—Development work, 580 ft.; mill ran 81 days, crushed 17,571 tons, yielding 15,052 ozs. Ore reserves 173,466 tons; average value 18·15 dwts. No. 8 level south drive advanced from 741 ft. to 813 ft., total length ore in this level is 904 ft., average assay value 1 oz. 12 dwts. over 43 in. No. 9 level south drive advanced from 697 ft. to 766 ft.; average width of reef is 23 in., assaying 1 oz. 3 dwts. Total length ore in this level is 680 ft., averaging 1 oz. 11 dwts. over 42 ins. No. 10 level driven 279 ft. from the bottom of the winze; samples have assayed as follows:—160 ft., 1 oz. 11 dwts. over 58 ins.; 100 ft., 5 dwts. 39 ins. Expect better development in depth; value ore reserve decreased on account of poor block between No. 9 level and No. 10 level.

* * * *

In their report for 1912, the directors of the Matabele Queen's Company, Ltd., state during the year 28,668 tons were developed and 18,298 tons were mined, leaving a total of 31,680 tons on hand at January 1 last, of an assay value of 43s. 11d. per ton. On August 31 last, these ore reserves had been further increased to 40,394 tons of a value of 45s. 3d. per ton, and at that date, including probable ore partially developed, the total ore reserves were estimated at some 60,000 tons, or rather more than three years ahead of the present reduction plant's requirements. In addition to these ore reserves, there is a large tonnage of accumulated slimes available for treatment. Operations during the period under review were considerably hampered by the drought prevailing, and consequent shortage of water, resulting in the mill running short time, thus entailing extra expense. An increased water supply has since been installed with satisfactory results.

The Berlin correspondent of *Le Temps* telegraphs that a large German banking firm is negotiating with the Benguella Railway Company with a view to participation in the raising of a sum of 75 million francs to be applied to the construction of a railway which, starting from Lobito Bay, in Portuguese West Africa, will take the line to Katanga. Of this railway 126 kilometres have already been surveyed, and 100 kilometres of track are actually under construction. It is expected that for 1,300 kilometres of its length the line will be on Portuguese territory, and for 800 kilometres it will run through Belgian territory. The new railway will join the Cape to Cairo line at Kambove. Nine-tenths of the company's capital is in the hands of the Tanganyika concessionnaires. *Le Temps* adds that the German East African Company has decided to establish on the 1st January next a regular steamship service calling at Lobito Bay and Mossamedes.

Susanna Mines.

The [illegible] of the Susanna Mines, [illegible] [illegible] shortage of water the company was unable to treat the [illegible] seven months of the year, and at the end of the year had accumulated [illegible] tons of slime of a recoverable value of £1,600, of which, in round figures, £700 could have been reckoned as profit, and there are 21[illegible] tons of accumulated concentrates and concentrate residues, of a value of about £1,700, still to be treated.

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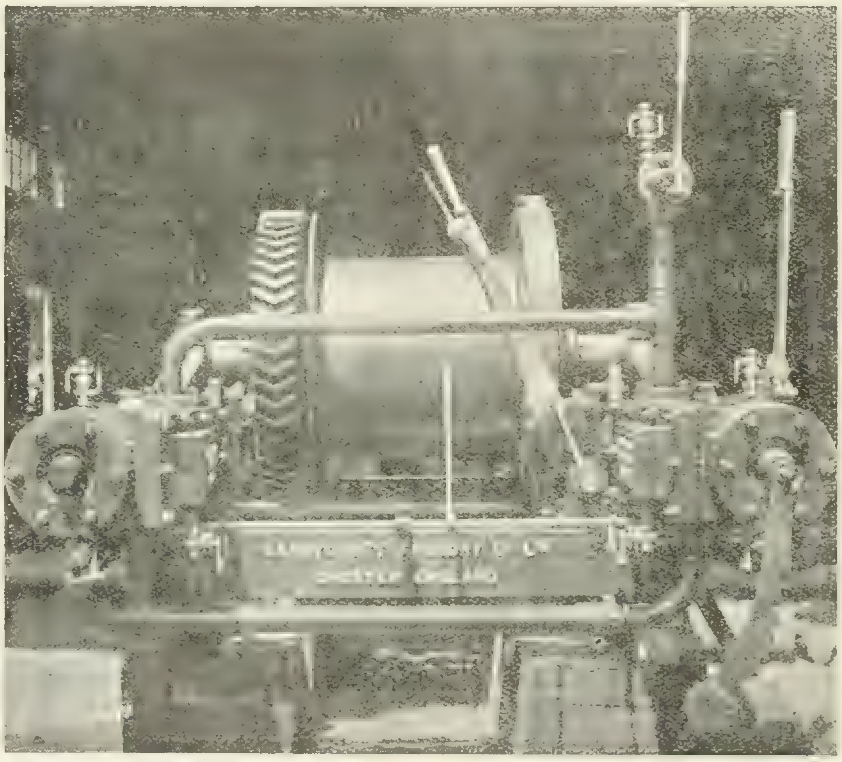

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Engineering Notes and News.

Cape Electric Tramways.

Increased earnings are again recorded by the Cape Electric Tramways, the report for the twelve months ended 30th June, just issued, showing that the profit on the combined undertakings amounted to £83,300, as compared with £77,500 for the previous year. After deducting general and office expenses, directors' fees, debenture interest and sinking fund charges, the net balance for the year was £32,200, as against £27,600, but as only £2,800, as compared with £7,800, was brought forward from the previous year, the sum available to be dealt with is £300 less than twelve months ago at £35,100. The appropriation for the special reserve is again £8,000 and the dividend remains at 5 per cent., while £2,500 is carried forward.

Qualities of Machine Drill Bits.

A good bit for use on machine steel should embody the following points, according to a booklet sent out by the Ingersoll-Rand Co.: (1) It should take full advantage of the chipping and fracturing quality of the rock; there is a certain depth to which the rock will be fractured when struck by a sharp tool, and if the edge is driven deeper or if it is dull, it will merely crush the material; (2) the wings should be as thin as is consistent with "mudding" and standing-up quality, since if the wings are heavy there is not sufficient space for the ejection of the cuttings; (3) the bit should be so designed that the cutting edge is its greatest diameter, since, in this manner, it will be always free in the rock at all times, the rock having a tendency to fracture a little bit larger than the length of the cutting edge; (4) the bit should be symmetrical, so as to allow equal wear on all corners, since otherwise the longest wing will cut a groove in the side of the hole and result in rifling and, furthermore, the wear will be unequal and extra strains set up in the steel will cause greater breakage; (5) the heat treatment should be suitable, precautions being taken not to overheat or to work while too hot; light, rapid blows should be used for forging, and tempering should be properly done, it being advisable to allow the bits to cool thoroughly after forging and to reheat for tempering.

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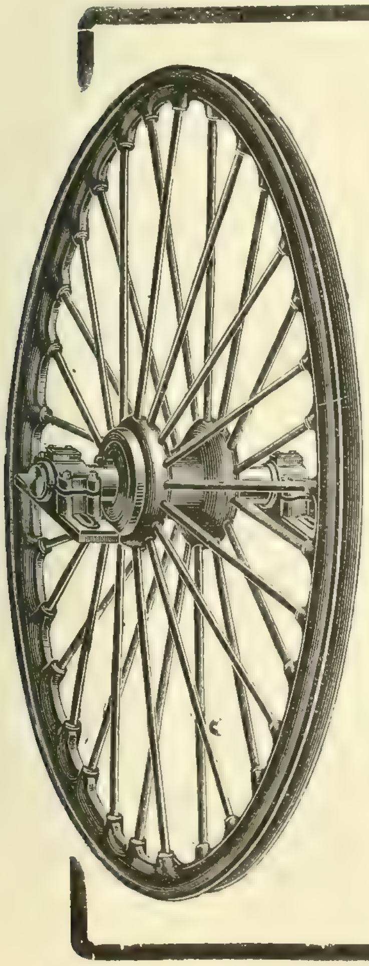

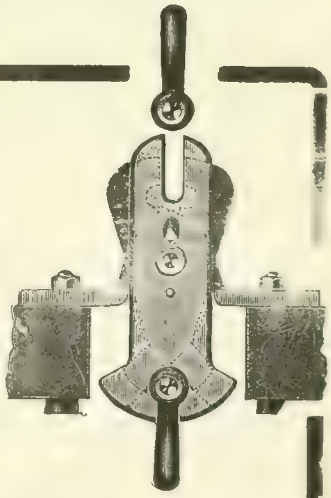

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Electric Blasting.

SOME ADVANTAGES AND DISADVANTAGES.

At the ordinary general meeting of the South African Institute of Electrical Engineers, last week, the question of electric blasting was again discussed. Mr. Bernard Price presided over a large attendance. Mr. Newberry said that the chief disadvantage of electric blasting seemed to him to be that it shook up the ground so much. When working at a shaft some years ago he found that blasting all the holes at once shook the ground so much that it was difficult to timber. He feared that the vibration would bring down the hanging wall. Mr. J. H. Rider remarked that he was not aware that in the system tried on the Rand the shots were all fired at one time. He had not seen the system himself, but he understood that fuses of different lengths were used, and that the electricity merely ignited the fuses. If that were so, electric blasting was no more dangerous to the hanging than ordinary blasting. Mr. J. S. Ross said that there were two systems. In shaft-sinking all the holes were generally exploded at one time. In the ordinary way on the mines the blasting was done with time fuses. The question of the advantage or disadvantage of electric blasting was one more for the mining engineer, though he hoped that there might be a discussion as to the best methods of installing the equipment. In electric blasting a very large amount of the smoke which was so objectionable in ordinary blasting, was eliminated, but what appealed to him was the fact that all the employees of the mine could be removed before the shots were discharged. They could operate at a great distance from the danger zone. As to shaft-sinking, he thought that the time had arrived when the Government should make it compulsory to blast only by electricity, because everyone would be removed from the shaft, and blasting would take place only at the surface. No men would be left after charging and loading. The danger from the careless igniting of gelatine, which had caused several regrettable accidents lately, would also be obviated. The disadvantages were not apparent to the electrical engineer. The greatest was the first cost of installing the equipment, but if the mining authorities took the electrical engineers into their confidence, economies might be effected. In conclusion, the speaker expressed the hope that some members might bring forward suggestions to avoid misfires. The Chairman observed that the danger of misfires was common to both the electric and ordinary systems of blasting. Mr. C. W. R. Campbell spoke of the advantages of electric blasting in coal mines. Mr. Ross said that in two mines the percentage of misfires had been very much less with electric blasting than with the old system. In one particular shaft electric blasting had been in use for five weeks without a single misfire. Mr. Nolan said that the first shot would probably bring down a certain amount of rock which would cut the shot-firing cable. In any case, they lost 20 or 30 feet of shot-firing cable every time they fired, and that was a disadvantage. Mr. Ross remarked that that seemed to be a bugbear of all mines. They forgot that the cap ignited the time-fuse in the same way as with ordinary blasting. In the case of electric blasting operated from the surface, shorter lengths of fuse could be used, and the shorter the fuse the less liability there was to failure. Asked whether it was possible to do away with fuses altogether, Mr. Ross said that was the practice in shaft-sinking when they wanted to raise a large volume of ground. The Chairman said that the matter would be further discussed at the next meeting.

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475. Paul de Brunn.—Improvements relating to zeolites or base exchanging bodies.
476. Charles Kratt.—Improvements in and relating to apparatus for heating liquids electrically.
477. Alfred Hurst.—Improvements in shirt or semmit.
478. Frank Knight Woodroffe and Harold Cecil Hodgson.—Improvements in centrifugal liquid pumps.
479. Carl Travels.—Free dust breathing for mining and other plants.
480. George Watson Tait.—Improvements in and relating to railway level crossing gates, consisting of booms and making them also suitable as an apparatus for directing road traffic.
481. Jean Repetto.—Improvements in refrigerators.
482. Denis Francis Breslin.—Improvements in rock drills.
483. Frank Sally.—Improvements in or connected with type casting machines.
484. George Green.—Improvements in spray ejectors.
485. Thomas Sidney Jory.—Improvements in rock drilling machine chucks.
486. William Henry Stelling.—Automatic water closet platform.
487. Rudolph Goch Else.—Spraying nozzle.
488. William Russell Degenhardt.—Improvements in apparatus for generating or producing gas.
489. James Esson.—An improved element for electrical cooking and heating.
490. Maurice Leblanc.—Improvements in and relating to high speed rotating bodies.
491. John George Leyner.—Improvements in oil burning forges.
492. John George Leyner.—Improvements in drill sharpening machines.
493. John Pieter and Joseph Dempers.—The puritan patent bottle.
494. Benjamin Holt and Pliny Eastman Holt.—Traction engine.
495. Charles William Dowsett.—Improved means for controlling the underflow of concentrators, classifiers and the like.
496. Anders William Lindberg.—Overwinding trips for electric hoists.
497. François Guy de Ferrieres and Simon Ludwig Kling.—Improvements in rotary drilling or boring heads, crowns, bits and the like.

The destruction of the old central power station of the T.G.M.E. a few days ago in no way affected the operations of the mine. They have not used the power station for a long time past for power generating purposes, as the mine obtains all the power they require from their magnificent power plant at Belvedere. Whilst this is the case, the plant was valuable to the mine as a stand-by in case of anything untoward happening at Belvedere. The company will not sustain any loss, however, as the building and machinery were fully insured. The plant in its day was a very fine one, and its installation, some twenty years ago, by Messrs. Siemens, Ltd., marked a new era in the history of gold mining in the Transvaal. It was the first large electric hauling plant to be erected in South Africa, and it was the initial attempt in the Transvaal to apply electric power for hauling purposes to mines.

THE WEEK IN THE SHAREMARKET.

Quiet and Featureless—Diamond Syndicates Still Monopolise Activity.

THE market in Rand stocks remains deadly dull, and for reasons mainly arising out of general financial conditions in Europe. The leading authorities all seem agreed that the Rand is suffering from the lethargy now common to all markets; and no improvement can be looked for until the money market develops a more healthy tone and temper. The coming Rand dividends may or may not exert a good influence, and the brighter native labour prospects cannot fail to assist. Meanwhile interest locally centres in the diamond syndicates, with Pilandsbergs still leading in price and activity. A satisfactory "progress report" was wired from the property on Thursday; and the shares remain steady awaiting the actual results of working. Buffelsdrift, the adjacent property, has come in for increased attention and the prospects are said to be improving daily. Harrisdales are also in the active list, and work is being pushed on. Crowns and Frank Smiths are recovering their lost ground, and will, doubtless, again become popular counters. Tins are quiet, and, for the moment, cannot compete with diamonds in public interest or favour.

* * * *

	Fri., 21st.	Sat., 22nd.	Mon., 24th.	Tues., 25th.	Wed., 26th.	Thurs., 27th.
Adair Ushers (15s.)	0 3*	0 3*	—	0 3*	0 3*	0 3*
African Farms	15 0*	15 0*	15 0	15 4*	15 0	15 3*
Apex Mines	—	16 0	16 0*	-	16 9*	17 3*
Aurora Wests	—	6 0*	6 0*		6 0*	6 0*
Bantjes Cons.	10 3*	13 3	14 0†	11 6*	12 0*	13 6*
Benoni Cons.	2 6†	1 9*	2 3†	2 0*	2 0*	2 0*
Blaauwbosch	90 0†	—	81 3	—	90 0†	—
Brakpan Mines	45 0*	45 0*	44 0*	—	—	—
Breyten Collieries	—	26 0*	26 0*	—	26 0	27 0*
British South Africa	18 6*	18 9*	18 9*	18 9*	18 9*	18 9*
Bushveld Tins	0 7	0 6	0 6*	0 8†	0 7*	0 8†
City and Suburbans (£4)	47 0*	47 0*	47 0*	47 6*	47 6*	48 0*
City Deeps	53 6*	—	—	-	54 0*	54 0*
Cloverfield Mines	4 1*	4 3*	4 3	4 3*	4 3*	4 1*
Clydesdale Collieries	7 0*	—	-	—	—	—
Cons. Investment	18 6†	17 0*	-	17 0*	17 0*	17 0*
Cons. Langlaagtes	27 6*	27 6*	—	27 0*	28 0*	30 0†
Cons. Main Reefs	16 9*	16 9*	17 0*	16 9	16 9*	16 9*
Coronation Collieries	12 6*	-	12 6*	12 6*	12 6*	—
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5	0 5*
Crown Diamonds	8 0*	8 0*	8 0	8 0*	7 9	7 9*
Crown Mines (10s.)	120 0*	120 0*	126 0*	120 0*	120 0	120 0*
Crown Mines Debentures	—	-		—	-	£100†
Doornhoek Tins	—		-	6 0*	5 6*	
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	8 0*	8 0*
East Rand Coals (2s. 6d.)	1 9	1 9*	1 9*	1 9*	1 9*	1 9*
East Rand Deeps	1 2*	-	1 2*	1 1	1 2*	1 3*
East Rand Props.	39 0*	—	—	40 0*	—	39 3*
Eastern Gold Mines (1s.)	1 1	1 0*	1 0*	1 0*	1 0*	1 0
Frank Smith Diamonds	6 0*	6 0*	6 3	6 3	6 0*	6 6
Geldenhuis Deeps	—	-	—	—	24 6†	—
Geduld Props.	20 0*	20 0*	20 0*		20 0*	-
Glencairns	—	-	3 3†		3 3†	3 3†
Glencoe (Natal) Collieries	—	—	6 9*	6 9*	6 9*	6 9*
Glynn's Lydenburgs	14 9†	14 9†	14 3†	14 6†	14 3†	14 0†
Government Areas	18 0*	17 9*	18 0*	18 0*	18 0*	18 3*
Jumpers	—	3 0*	—	3 0*	—	—
Jupiters	4 0†	4 0†	3 6*	3 6*	3 6*	3 3*
Kaalfonteins (2s. 6d.)	—	0 6	0 3*	0 4*	0 5	0 5*
Klerksdorp Props.	1 11*	1 11*	—	-	2 1†	1 11*
Knight Centrals	8 0*	8 0	8 0	7 10*	8 0	7 9*
Knights Deeps	—		34 3†	29 6†	-	
Lace Props.	3 0†	3 0†	—	2 7	3 0†	
Luipaardsvleis	8 6*	8 6*	8 6*	8 6*	8 6*	8 6*
Lydenburg Farms	2 10*	2 10*	2 11*	2 11*	2 10*	2 10*
Main Reef Wests	—	—	8 0†	7 0*	6 3	6 0
Do. Debentures		-	£65*	£62½*	£63*	£62½*
Middlevlei Estates	-	0 9*	-	0 9*	0 9*	0 9
Modderfontein B.	78 0*	-	78 6			
Modderfontein Deeps	31 9*	32 3*	33 0	32 9*	32 9*	32 9*
Natal Navig. Collieries		-	15 0*			
New Boksburgs	0 9	0 9*	0 9*	0 9*	0 9*	0 10*
New Eland Diamonds	-	—	-	30 0†	30 0†	30 0†
New Era Cons. (5s.)	5 0*	5 0*	5 0*	5 3*	5 0*	5 0
New Geduld Deeps	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
New Kleinfonteins	20 0*	21 0*	20 6	20 3*	20 9*	21 0
New Modders (£4)	222 6*	225 0*		-	-	225 0*
New Unifieds	11 6*	-	—	-		
Orange Diamonds	1 11†	1 6*	1 8*	1 10	1 11	2 0†
Piggs Peak	9 0*	9 0*		9 6	9 6	9 0*
Pretoria Cements		45 0*	45 0*	45 6*	45 0*	45 0*
Princess Estates	4 6*	4 6*	4 6	4 6*	4 6*	4 6*
Rand Collieries		—		1 6	1 0*	—
Rand Klips	2 1	2 1	2 3	2 0*	2 1*	2 1*
Rand Nucleus	1 4*	1 4*	1 3*	1 3*	1 6	1 6*
Randfontein Deeps	3 0*	-	3 0*	3 0*	3 0*	3 0*
Randfontein Estates		—	—	23 0*	23 3*	23 9*
Roberts Victors	27 6	28 0	27 0*	27 0*	27 0*	27 0*
Robinson Deeps	—	-		28 6*	28 6*	-
Rooiberg Minerals	27 6*	28 0*	28 0*	28 6*	28 9*	28 9*
Rood. Durban Deeps	19 0*	-	19 0*	19 0*	19 0*	19 0*
Rose Deeps	45 6*	—	—			-
Shebas	5 0*	5 0*	5 0*	5 0*	5 0	5 0*
Simmer Deeps	1 0*	1 0*		1 0*	1 0*	
S.A. Breweries	—	-	-	41 0*	40 0*	-
S.A. Diamonds	30 0*	—	30 0*	30 0*	30 0*	30 0*
S.A. Lands	2 11*	2 11*	2 11*	2 10*	2 10	2 10*
Springs Mines	10 6*	10 6*	11 0	10 9	10 9*	10 9*
Steyn Estates	13 6†	12 6†				—
Sub Nigels	—	7 6*	7 6*	7 9*	8 3†	7 6*
Swaziland Tins	—	43 0*	-	—	—	—
Transvaal Coal Trust	—	—	—	-	29 0*	29 0*
Transvaal G.M. Estates	48 0*	48 0*	48 0*	48 0*	—	48 0*
Tudors	—	—	2 0†	—	2 0†	—
Van Ryn Deeps	33 3	32 9	33 3	33 3*	33 9	33 9*
Village Deeps	—	—	—	-	—	35 0†
Village Main Reefs	—	—	—		-	36 0†
Vogelstruis Deeps	—		—	—	1 0†	1 0†
West Rand Cons.	—	—	-	—	8 0*	
Western Rand Estates	2 6†	2 0†	2 0	2 0†	—	-
Witbank Collieries	41 0*	—	41 0*	41 0*	41 0*	41 0*
Witwatersrands	—	—	—	67 0*		-
Wit. Deeps	53 0*	53 0*	54 0*	54 0*	—	54 0*
Wolhuters	12 0*	12 6	12 0*	12 0*	12 0*	12 6*
Zaaiplaats Tins	33 6*	33 9	33 6*	34 0	33 9*	33 0*

*Buyers. †Sellers.

Companies to be Dissolved.

Notice is given in accordance with Section 196 (3) of the Companies Act, 1909 (No. 31 of 1909), that at the expiration of three months from the date hereof the names of the undermentioned companies will, unless cause is shown to the contrary, be struck off the register, and that the companies will be dissolved.

No.	Name of Company.	Date of Registration.
602	American Dry Alluvial Gold Mining Company, Ltd.	24/4/1891
633	A. A. Syndicate, Ltd.	2/11/1891
662	A. Syndikaat, Beperkt	6/4/1892
759	Alpha Syndicate, Ltd.	50/3/1893
769	Albert Buildings Company, Ltd.	25/4/1893
1164	Adamant Syndicate, Ltd.	15/10/1895
1335	American Importing and Trading Company, Ltd.	29/7/1896
1365	American Medical and Chemical Company, Ltd. .	30/9/1896
1742	Apex Consolidated Coal Syndicate, Ltd.	18/7/1902
1825	Herpstfontein Coronation Syndicate, Ltd. ...	30/12/1902
2010	Hebron Diamond Mining Syndicate, Ltd. ...	27/10/1903
2055	Koh-i-nor Diamond Prospecting Syndicate, Ltd ...	1/2/1904
2222	New Randfontein Reefs, Ltd.	22/12/1904
2299	Germiston Co-operative Dairy Company, Ltd. ...	11/4/1905
2573	Fairlight Syndicate, Ltd.	11/9/1906
2622	Messina Copper Extension, Ltd.	31/10/1906
2626	Cosmos Diamond Syndicate, Ltd.	6/11/1906
2646	Alex Options, Ltd.	8/12/1906
2726	Premier Copper Exploration Syndicate, Ltd. ...	16/3/1907
2746	Bonanza Copper Developing Syndicate, Ltd. ...	2/4/1907
2757	The Tokoza Diamond Syndicate, Ltd.	13/4/1907
2806	The African Mines Corporation, Ltd.	29/6/1907
2935	Monfarland Copper Exploration, Ltd. ..	23/4/1908
3091	Macoustie River Valley Syndicate, Ltd.	17/2/1909
3098	The Anglo-African Trust, Ltd. ...	25/2/1909
3134	Mosses & Guthrie, Ltd.	24/4/1909
3318	The Metals Extraction Company, Ltd.	23/2/1910
3538	Alhambra Theatre and Winter Gardens, Ltd. ...	28/7/1910
3708	Germiston Liquidation Stores, Ltd.	31/3/1911
3821	The African Industries, Ltd.	25/8/1911
3974	Premier Enterprises, Ltd.	14/4/1912
4093	Zenith Tin Mines, Ltd.	20/10/1912

The best "Reef Traveller" is the *South African Mining Journal*.

Finance, Commerce, and Industries.

Railway Rates to Rhodesia.

In January last the Johannesburg Chamber of Commerce addressed the General Manager of Railways protesting against the rates charged on goods sent from Johannesburg to Rhodesia as compared with the charges on similar goods consigned from Coast ports. The committee has now appealed to the Minister of Railways and urged that the rates from Johannesburg should be placed on an equal footing with those from the ports—having due regard to the cost of transporting the goods to this centre in the first instance. The Minister has promised to give consideration to these representations. In reply to inquiries as to the possibility of the Stores and Publicity Departments being removed to Pretoria, the General Manager states that, as far as he is aware, there is no intention at present of disturbing the existing system of administration.

* * * *

Railway Inquiry Commission.

In response to an invitation from the Railway Inquiry Commission the committee of the Johannesburg Chamber of Commerce proposes to give evidence in regard to certain subjects included in the terms of reference; and the following recommendations are submitted for the confirmation of members, viz.:—(1) " The immediate introduction of an eight hours' day."—The adoption of a hard and fast working week of forty-eight hours would be inadvisable, and it is doubted whether it would be practicable. The matter should be considered with due regard to the work to be actually done. (2) " Minimum wage for white adult employees from eight shillings upward per diem."—Under the existing circumstances of the country the committee is unable to recommend the adoption of a minimum wage. (3) " Abolition of piecework."—So far as the question affects the industries of this country it is considered that these have not reached such a state of development as would enable them to afford guidance in deciding this question. From a commercial point of view it is, however, considered that it would be inadvisable for the Government to tie its hands—especially in view of the possibilities of work being done here which under other conditions would have to be done Overseas. (4) " All apprentices to be fully indentured, and each apprentice to be placed under the supervision of a journeyman so as to be thoroughly taught his trade. Apprentices after serving their time to be classed as journeymen." It is considered desirable that all apprentices should be fully indentured, and that the Government should take steps to amend the Masters' and Servants' Law as to enable this to be carried out. (5) " Overtime rates—Mechanics, time and a half for all overtime; double time for Sundays and Public Holidays."—The committee considers that the rate for overtime should be time and a quarter.

* * * *

New Shipping Association.

In connection with the proposed new shipping company the prospectus has been drafted, and will follow in the main on the lines foreshadowed last week, the most important difference being that the capital of the company, instead of being £250,000, as stated, will be £50,000 nominal, in shares of £1 each, 5s. of which will be called up very soon after the association has been established. The head office is to be in Capetown, but agencies will be opened at various South African ports, also one in London. The basis of alloting shares is to be according to the amount of cargo each subscriber can guarantee, namely 250 shares for every 100 tons of cargo guaranteed monthly, but subscribers are not to be compelled to give the association line a greater quantity of cargo than they sign for. The association does not propose to build steamers, at least not yet. They will charter or lease steamers according to their requirements, the intention being at present to run a fortnightly service. Shareholders are not to be permitted to transfer their shares without the consent of the directors, but provision is made for the retirement from the association of any member under a penalty clause, that is to say, anyone can retire by forfeiting his shares, and paying up all unpaid calls thereon. The memorandum urges on those who have signed the Conference Line agreement to give notice of their intention to withdraw therefrom on December 31, so that they may enter the " Mutual Freights Association," which is to come into operation about the middle of next year.

The Botanical Society of South Africa.

It is generally known that a National Botanic Garden has been established at Kirstenbosch, near Capetown. Effect has thus been given to a desire which has been expressed frequently in the Press and elswhere at various times during the last century. Work was commenced on July 1st last; a considerable area has already been cleared and is now being planted upon. The position and other natural features of Kirstenbosch, an estate of some 400 acres, make it peculiarly suitable for the purpose in view, and there is no doubt that, given adequate support, it is destined to become one of the most beautiful and interesting of the botanic gardens of the world. The estate already bears a considerable collection of native trees, shrubs, and smaller plants in their primitive state. This collection, representative of the south-western region, is being daily increased by the gifts of numerous helpers from all parts of the Union. There is no reason, climatic or otherwise, why, in the course of a few years, the Gardens should not adequately illustrate the most striking features of the vegetation of all ports of South Africa. There will thus be gathered together in one place, accessible to the largest possible number of the inhabitants of South Africa and of oversea visitors, a truly national collection of living plants available for study and research, botanical and horticultural. The control of the Institution is vested in a Board of Trustees, consisting of Lord de Villiers, the Mayor of Capetown, Sir David Graaff, Sir Lionel Phillips, and Mr. W. Duncan-Baxter. An institution of this character cannot prosper unless it has behind it a strong body of public opinion. The force of a widely-expressed public opinion has brought the Gardens into existence. They will flourish only so long as the public continue to take an active interest in their growth and development. The funds available for their support are at present derived from a Government grant of £1,000 per annum. Not only is this sum quite inadequate for an enterprise of this magnitude, but, in making this grant and in permitting the estate to be used for the purposes of a National Botanic Garden, the Government made it a condition that the project should receive financial support from other sources. The Trustees have reason to hope that further grants will be received from local authorities. In addition, a large section of the public has already expressed its desire to support the institution financially, and, to this end, has formed the Botanical Society of South Africa, in which there is already enrolled a large and influential membership. The Executive of the Botanical Society ventures to hope that the national importance of the work, and the desire which will be generally felt throughout South Africa, to aid in the establishment of a botanic garden worthy of the country and of the magnificent flora which is one of its chief glories, will lead to a largely-increased membership. Intending members are asked to communicate with the Secretary, Mr. Maynard Nash, 63, Fletchers Chambers, Longmarket Street Capetown. The terms of membership are:—Life members, £25 (composition fee); family members, £2 2s., annual subscription; ordinary members, £1 1s., annual subscription; associates, 5s., annual subscription. Associated members possess all the privileges of membership except that they have no vote.

An Australian—it might be a Barberton—paper that ought to know better has the following:—" When the ore is treated by ordinary cyanide processes so much gold is lost at every stage that only a fraction of the total value is recovered, whereas by my process I have recovered from four-ton parcels of ore as much as 12 times the assay value, as indicated by ordinary fire tests, and never less than four times as much. Ore, assaying 4 dwts., gave from 16 dwts. upward when operating on Pine Creek ores." Prodigious!

Notice is given that application will be made on behalf of the Guide Mining Company, Ltd. (in liquidation), to the Registrar of Mining Titles, Transvaal Province, for a certified copy of the deed of transfer No. 391/1911, dated the 12th day of July, 1911, in favour of the said company, of certain 150 base metal claims, numbering from 30957 to 30156, in the Leydsdorp Division of the Mining District of Pietersburg.

Automobile Notes.

The annual motor show recently opened at Olympia is now the largest trade exhibition in the world, and has made Great Britain the world's market in automobilism. No less than 349 firms are exhibiting, of which 37 represent the ever-important coach-building trade, the same number being concerned with tyres and wheels. 149 firms display accessories, while the firms showing cars and chassis number no less than 119. The international character of the show is demonstrated by the fact that Austria, Belgium, France, Germany, Holland, Italy, Spain and America are all represented.

* * * *

The distinctive note of the show is said to be high-class workmanship, and in this respect the British exhibits compare favourably with the best that the Continent can send. That the exhibition is representative in more ways than one is obvious from the wide range of style and price it represents. Accommodation for two, four or seven persons is provided, with a corresponding variation in power and price. The needs of the medical man, the tourist at home and abroad, and the ever-increasing user of the town carriage, are equally studied. But a striking feature of the show is the catering for the man of moderate means. Attention has also been paid to the pressing problem of accessibility of the mechanism. Time saving is aimed at by a good disposition of working parts, automaticity of the functions of lubrication, ignition and carburation, and by the growing use of detachable wheels and rims. As for comfort, the suspension shows here and there better design in the road springs themselves. Seating arrangements are better and more varied than ever before, while in the matter of the width of doors and windows the modern car is constantly improving. Self-starting devices are gaining ground, and soon no private motorist will be content without one.

* * * *

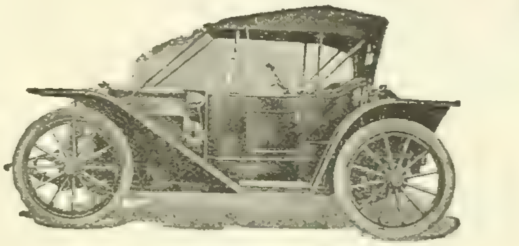
Mechanical changes are said to be not particularly striking, existing designs giving so much satisfaction as to make the value of changes rather questionable. It is for this reason that the majority of the exhibits reveal but slight collective modification, with incidental small experiments here and there. Four-cylinder engines predominate, with sixes a good second, and monobloc casting is generally adopted. A slight tendency towards reducing the strokebore ratio is shown equally with a decided quietening of gearing and reduction of friction. Working parts are adequate and well protected, and the 1914 chassis are strengthened to suit the highly-efficient modern engine and the hard service to which cars are put as a matter of course nowadays. There is still some hesitation amongst makers as to which is the better, three or four forward speeds. The greater number is, however, becoming pretty general, especially with cars of moderate power. It will be found that gear boxes and differential casings are quiet and oil-retaining, and that provision for lubricating all working parts in the chassis is generally found.

* * * *

The owner of a Wolseley car, writing from Mac Mac, Pilgrims Rest, says that although the roads are poor, with gradients frequently as severe as one in three and a half, there are already several motors now in use there. "We get along, although, when trying pastures new, we have to fall back on mules or oxen, or even the Kafir when a kraal is near at hand. In the latter case, in getting a car out of a donga, it generally happens that the entire family lend a helping hand, so that from the front seat you have a varied view of costumes scanty and picturesque."

* * * *

Any experiment that has for its object the successful control of traffic must be of interest to the motorist—as indeed it must be to every member of the community. The



The K-R-I-T Car.
4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
'Phone 1434.

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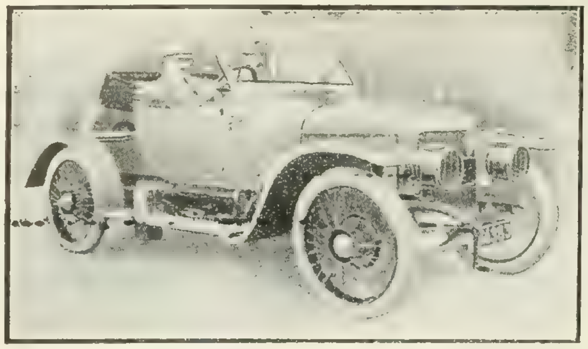

15·9 H.P.Colonial Vulcan.
"Imperial," Three-seater with Two-seat Dickey.

Important Notice.

ONE CAR, as per illlustration, for immediate delivery.
Price £450 complete.
ONE 5-SEATER, arriving incoming mail.
Price £475 complete.
These cars are beautifully finished, and deserve the closest inspection.

Demonstrations and all particulars from the Sole Agents:—
T. B. ADAIR & CO.,
(Vauxhall Agency)
Phone 2570. | 67, Kotze Street, Hillbrow. | Box 1940

authorities in Kent are testing a suggestion made by one of the members of the County Council for trying to keep heavy vehicles off the crown of the road, so that overtaking vehicles may pass them more readily. On a stretch of tar-painted road near Ashford, a white line has been painted along the centre of the road, and it is hoped that it will have the effect of keeping the two streams of traffic to their proper sides.

* * * *

One of the novelties which will be shown at Olympia is the T.A.T. electric engine-starter. It is a waterproof and dust-tight combined lighting dynamo and self-starter, having a current output of 250 watts at 12 volts. It is very neat in appearance, is of British construction entirely, and can, of course, be fitted to any car. In weight it is no heavier than an ordinary lighting set, and the cost is not prohibitive.

* * * *

An appeal is being made by the Automobile Association and the Motor Union for the creation of a National Sign-Post Fund, by voluntary contributions, having for its object the systematic erection of adequate finger-posts throughout the United Kingdom, upon a definite plan. The fund has been opened by a contribution of £5,000 from the Association.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Gaiety Company	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Durban-Roodepoort Gold Mining Co.,

LIMITED

(Registered in England).

NOTICE is hereby given that a Seventy ninth (79) Interim Dividend of fifteen per cent. (15 per cent.), equal to 3s. (three shillings) per share, has been declared payable on and after the 20th December, 1913.

Holders of Shares to Bearer should present Coupon No. 79 for payment of the above 3s. (three shillings) per share at the Standard Bank of South Africa, Ltd., Johannesburg Branch on and after the 20th December, 1913.

W. A. MARTIN,
W. MACFARLANE, } Local Directors.
L. CLARENCE,

Johannesburg 21st November, 1913. 12127

Sub Nigel.

Number of feet developed and sampled, 915; reef width, 10·15 inches; reef value, 13·14 dwts.; tons milled, 14,700; total yield of gold, 5,918·305 ozs.; revenue from gold, £24,822; sundry revenue—rent from accumulated slimes leased, £889; working expenditure, £20,899; working expenditure per ton, 28s. 5·216d.; working profit for the quarter, £3,923; profit per ton, 5s. 4·023d.; appropriation for additions and renewals fund, £151; profits tax, estimated, £96; Government annuity for September on capital account, £3,773; net profit, £4,564. Operations have been seriously affected by the miners' strike, which took place early in the month of July. No time was lost directly underground, except two shifts in "E" shaft, and in some of the development faces; but indirectly efficiency was adversely affected owing to unrest among the men. Though the stoppage in the reduction plant during the actual strike period amounted to only 22 hours, the loss in native labour which ensued, and which was referred to in the last quarterly report, reduced the average number of coloured labourers for the quarter by 75, equal to 12·156 per cent. less than during the preceding quarter. Driving east and west on the 11th level in "E" shaft has proceeded, 47 feet and 101½ feet respectively, but without disclosing payable values. At 30th September the gold in reserve was 450 ozs., as compared with 600 ozs. at 30th June.

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The Week's Company Meetings.

TRANSVAAL AND DELAGOA BAY INVESTMENT CO.

Annual Meeting.

Colliery Profits.

The ordinary annual general meeting of shareholders of the Transvaal and Delagoa Bay Investment Co., Ltd., was held on November 25th in the boardroom at Exploration Buildings. Mr. Stephen Cope Black presided, and there were present Comte F. de Ferrieres, Messrs. Robert Ehrmann, Spencer Fleischer, H. Daniel, Gustave Imroth, G. J. Goldsberg, and B. Moses, the share representation being 80,103 shares out of a total issue of 185,000.

In moving the adoption of the report and accounts, the Chairman said: In submitting to you the report and statement of accounts for the year ended the 31st of August, 1913, it again affords me pleasure to present what I feel sure you will acknowledge is a favourable record of the past year's operations. The realised net profit, after writing off £7,501 18s. for depreciation, amounts to £40,282 10s. 1d. The sum of £84,632 1s. 8d. was brought forward, and the total to credit of profit and loss account now is £124,914 11s. 9d. We recommend payment of the same dividend as last year, namely, 17½ per cent., equal to 3s. 6d. per share. This will absorb £32,375, leaving £92,539 11s. 9d. to be carried forward, as against £85,132 1s. 8d. twelve months ago. Cash and equivalent assets aggregate £86,129 10s. 6d. It will be observed that they show a decrease of £13,132 10s. 7d., as compared with the previous year, but a reference to the accounts reveals the fact that property account has been increased from £107,711 8s. 4d., at which it stood in the last balance sheet, to £122,899 17s. 4d. The greater portion of this increase is due to the acquisition of additional freehold property, portion of the farm Driefontein No. 399, over three thousand acres in extent and immediately adjoining our colliery, to which I shall revert later on. The sum of £1,400 has been expended on improvements to farms, and we have increased our share and debenture holdings by £3,385 and £4,638 respectively. Both shares and debentures stand in our books at or under cost price, and could be realised at a profit, but we do not consider it either necessary or advisable to dispose of any of them at this juncture, as we feel confident they will appreciate in value.

Truck Shortage.

The operations of the Transvaal and Delagoa Bay Collieries have been quite satisfactory, the output reaching a total of 539,038 tons, as compared with 506,063 tons last year. But for the continued shortage of railway trucks, which caused us intermittently to suspend work at the mine for a considerable time, it would have been possible to further increase this total. We have the assurance of the Minister of Railways himself that an adequate supply of trucks and locomotives will soon be available, but as an additional safeguard we have erected at a cost of several thousand pounds a storage bin having a capacity of 1,300 tons.

I am sorry to say that the increase of output it not proportionately reflected in the profits for the year. The drawbacks just mentioned necessarily militated against work being carried on to the best advantage, and, besides the average selling price of coal showed a reduction. Development has proceeded as usual with our requirements, and the coal maintains its high quality. As evidence of the stability of the calorific value of our product, I would just mention that during the past twelve months over a thousand samples of coal were determined by assay in our laboratory, and they showed scarcely any variation from month to month. Referring now to the property adjoining our colliery, I think we have every reason to be well pleased with our purchase, seeing that its coal seams immediately adjoin our boundaries for a length of about a mile and three-quarters, and thus not only form an enormous increase in our coal reserves without the need of providing separate underground or surface equipments, but also greatly facilitate economical and efficient working. The coal obtained in the new ground has been proved by actual mining to be of the same thickness and good quality as our own. In the general manager's report you will notice that he refers to the excellent supply of pure water also found on the northern portion of the newly-acquired ground. It is a fortunate discovery, as the dry seasons of the past few years had considerably weakened the springs whence we had for many years past drawn our supplies.

Machinery, Plant and Properties.

Machinery and plant have been maintained in a high state of efficiency and you will be interested to learn that the board decided on various important improvements and additions. At No. 2 workings, where the plant has been in continuous operation for the past nine years we effected changes to the screens and mechanical parts, with the object of lessening the percentage of small coal. The alterations were accomplished without a hitch during the past month, and the whole plant is running with the utmost smoothness and regularity. We regard expenditure of this kind strictly as replacements to machinery and plant, and include them in our working costs.

Remodelling the Plant.

The plant at No. 1 shaft, which has not been worked since 1907, will be remodelled with the most up-to-date separating, cleaning and distributing machinery. It is expected that this work will be completed early in 1914, and when ready, we shall be guarded against undue pressure being thrown on any one plant, and, moreover, we shall be in a position to rapidly increase our output when required.

As you are aware, it has always been the policy of this company to devote portion of the yearly profits to the building up of a strong financial position, and we can thus readily deal with any extraordinary expenditure. It enabled us to make the advantageous purchases already referred to, and will permit of defraying the cost of above-mentioned alterations of plant—estimated at about £21,000—without interfering in any way with the payment of regular dividends.

I am glad to state that the industrial disturbance on the Witwatersrand during June and July last did not seriously interfere with the regularity of our output, and I take this opportunity of acknowledging the devotion and loyalty of the employes on the collieries during that period of unrest. The men on the collieries are well paid and cared for, and it is no exaggeration to say that their occupation is the envy of many other workmen in our local industrial fields. I was, therefore, somewhat disquieted when my attention was drawn to page 117 of the annual report for 1912 of the Mines Department for the Union of South Africa, where reference is made to the accident mortality rate on coal mines, and that in the Transvaal "the collieries exhibited a less favourable condition of affairs in comparison with those of a neighbouring State." To afford you a few facts as to the safety and health conditions under which both white and native labourers perform their work on our colliery, I have closely examined the mine statistics, and I find that for the past sixteen years with the exception of one white workman killed through accident, not another white employee had succumbed from natural or any other cause. Turning to the native accident rate, an equally satisfactory state of affairs can be recorded, having regard to the greater percentage of natives employed. During the past seven years, only three natives have met their deaths by accident, while the average mortality rate has been among the very lowest on these fields.

The Transvaal Coal Owners' Association continues to distribute the supplies of its members to the satisfaction of all concerned Its agents are active in promoting the use of Transvaal coal wherever possible Oversea, and it is this branch of trade that promises extend in directions, where hitherto it has not found ready sale. But the stability of its quality, its lowness in sulphur contents, and the consequent freedom from risk of spontaneous combustion, when shipped or stored, are beginning to tell in its favour with Overseas consumers as well as in shipping circles.

Your landed properties are fully scheduled in the report. Signs are not wanting that there is a steady rise in the value of agricultural land all over the Union of South Africa. We have recently had offers for several of our farms which we did not entertain, but we are not averse to lease farms to industrious and capable agriculturists.

Lately I paid a visit to Delagoa Bay and inspected our various properties. The progress at the port is not as rapid as I had hoped, but nevertheless, I found that there is a genuine effort in all circles for the continued development of trade.

The present year has started quite satisfactorily, and we look forward with confidence to steady business and good results. Since we last met we have suffered the loss of a valued colleague in the demise of the late Mr. Michael Dodd. He took a warm interest in the colliery and all that concerned this company, and we very much deplore his loss to the board. The vacancy thus caused has been filled by the appointment of Mr. Julius Berlein, one of the founders of this company.

I have sincere pleasure in expressing our acknowledgements to our new general manager at the colliery, Mr. J. McPhee, M.Sc., M.I.M.E., whose services we appreciate.

I also desire to convey our thanks to the whole of our staff, at the head office, the collieries and Delagoa Bay, for their good services.

The report and accounts were adopted.

The retiring directors were re-elected and the auditors reappointed.

A bonus of five hundred guineas was voted to the directors.

The Consolidated Gold Fields of South Africa, Ltd.

REPORT OF THE DIRECTORS

For the Year ended 30th June, 1913.

Presented to the Shareholders at the Ordinary General Meeting held at the Cannon Street Hotel, Cannon Street, London, E.C., on Tuesday, the 18th day of November, 1913, at Noon.

ACCOUNTS.

The Directors of the Consolidated Gold Fields of South Africa, Limited, present to the Shareholders the following Report on the Company's affairs, with the Accounts for the year ending 30th June, 1913, and Balance Sheet at that date.

CAPITAL.

The Ordinary Share Capital of the Company remains at £2,000,000 and the Preference Share Capital at £2,500,000 in 1,250,000 Six per cent. First Cumulative Preference Shares, and 1,250,000 Six per cent. Second Cumulative Preference Shares.

DEBENTURES.

The Debenture Issue has been further reduced since 30th June, by the drawing of £25,000, leaving the outstanding Debentures at present £175,000.

PROFITS.

The realised net profit on the year's operations, after writing off the depreciation as stated hereafter, is largely derived from dividends received on investments, and, after deducting debenture interest and all outgoings, shows a balance to credit of £371,745 17s. 10d., from which the dividends on the First and Second Preference Shares, an interim dividend of 1s. 0d. per share on the Ordinary Shares, English Income Tax and French Government Taxes, have been provided, leaving £110,404 3s. 6d., which, added to the sum of £52,112 0s. 0d. brought forward from last year, leaves £162,516 3s. 6d.

In addition to the foregoing realised profit the Company's share investments as per Schedule No. 1 (apart from any appreciation in value on properties and ventures, as per Schedule No. 3) show, on current market prices, and on an estimate of unquoted shares, a further large unrealised profit.

Investments stand in the books at average cost or under, and all shares are taken into account at prices below those current at the date when the accounts were made up.

SCHEDULES OF INVESTMENTS.

Schedules of the Company's principal investments and unfloated properties are appended to the Accounts.

As stated by the Chairman at the last Annual Meeting, and as will appear from Schedule No. 1, some material changes have taken place in the Company's Transvaal Shareholdings—the sale of Crown Mines, Village Deep, City Deep, and Nourse Mines shares resulting in a considerable profit.

The total market depreciation on investments amounts to £1,402,201 6s. 10d., which has been provided for by charging £1,000,000 against the reserve, and £402,201 6s. 10d. against the year's profits.

RESERVE.

The amount to credit of Reserve now stands at £1,800,000, of which part is invested as per Schedule No. 2 and the remainder in the general assets of the Company.

DIVIDEND.

The Directors recommend that a final cash dividend of 5 per cent., free of Income Tax, be paid on the 2,000,000 Ordinary Shares, amounting to £100,000, and making with the interim dividend 2s. per share for the year, leaving £62,516 3s. 6d. to be carried to the credit of the current year's Profit and Loss Account.

TRANSVAAL.

KNIGHTS DEEP, LIMITED, AND SIMMER AND JACK EAST, LIMITED (IN LIQUIDATION).

In June last the Knights Deep, Limited, decided to exercise the option held over the Simmer and Jack East property, and the working arrangement with the Company was terminated at the 30th June, 1913, since which date the two properties have been worked as one. The capital has been increased to £743,526, and 100,000 shares have been allotted to the Company in repayment of the loan of £250,000 made by it to the Knights Deep, Limited.

SIMMER AND JACK EAST, LIMITED (IN LIQUIDATION).

Since the date of the last Report the Company has discharged its liability in respect of the guarantee of the First Debentures of the Simmer and Jack East, Limited (in liquidation), and has received from the Liquidators of that Company the proceeds of the sale of its assets which, in pursuance of the arrangement made with the Knights Deep, Limited, is now mainly represented by the above-mentioned 100,000 shares of the Knights Deep, Limited. The loss (including the sum of £135,482 18s. 2d. representing the present actuarial value of eight years and six months' guarantee of interest on the Second Debentures which has been reserved for in the Balance Sheet) has in the accounts been taken at £308,314 12s. 3d., which amount has been provided from the remaining balance of a fund which had been created to meet exceptional circumstances; should the above security ultimately realise a higher figure than that at which it has been taken in these accounts, this loss will be correspondingly reduced.

The usual annual reports by the Joint Managers of the Company in Johannesburg (see page 17) and by the Superintending Engineer (see page 28), giving a full account of the work carried out on the mines in which the Company is interested and of the administrative matters dealt with during the year, are appended. It will be seen therefrom that the decline in profits from mining operations is partly due to the fall in the grade of the ore encountered during the past year, whilst extra expenditure under the Miners' Phthisis Act, loss of running time at Knights Deep, and the other special causes referred to have been contributory factors.

Mr. H. H. Webb, the Consulting Engineer, proceeded to Johannesburg in February last for the purpose of making an exhaustive investigation into the methods employed in the working of the mines under the Company's control, with the result that he has entirely approved the policy carried out by the Superintending Engineer. The main paragraphs of his report are set forth in the annexure herewith (see page 24).

Whilst therefore the Directors are satisfied that every effort has been and will continue to be made to counter-balance all adverse factors by cheaper working, they draw special attention to the second paragraph of the Superintending Engineer's report, which summarises the policy concurred in by Mr. Webb, viz.:—

"A great deal of the work of the year has been directed towards operating the producing mines of the Group to best advantage, so as to secure maximum profits while mining and treating ore of a grade approaching the value of that exposed by development as greater depths in mining are attained."

The Directors have good reason to believe that the strike of European employees was not due to any general or serious dissatisfaction with the terms of their employment, whilst (in not a few cases) it is beyond question that large numbers of them were forced against their will to cease work through fear of bodily injury, from which the civil and military force available was not adequate to protect them. The allegation that the representatives of the mining houses were not at their posts in order to assist the Government in making arrangements for quelling riot in Johannesburg has been withdrawn; and, notwithstanding the grave anxiety as regards the safety of their own families from which the officials of the Company suffered for many hours, they were unremitting in their attention to the public duty unexpectedly forced upon them by a most serious state of affairs. It is much to be hoped that the Union Government realise that not merely has the orderly continuance of an immense industry been seriously interrupted, but also the safety of large numbers of women and children has been in grave jeopardy, and that the present inadequate preventive force will have to be strengthened.

The break in the continuity of mining operations, due to the strike, referred to in detail by the Joint Managers has been a source of grave anxiety and disappointment, particularly in view of the previously favourable progress of native labour recruitment. The Directors believe that the good sense of the white employees and the fair spirit which is evident in the attitude of the mining houses will shortly lead to a complete and friendly settlement of all outstanding questions.

JUPITER GOLD MINING COMPANY, LIMITED.

The present labour shortage has made it impossible to continue working the Jupiter mine fairly and at the same time profitably, and a circular was issued to the shareholders of the Jupiter Gold Mining Company, Limited, on the 3rd October, informing them that it has been decided to suspend operations and to conserve the Company's cash resources until conditions become more favourable for the resumption of crushing operations.

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Notes and News.

Closing Down the Cinderella.

A circular is being issued by the directors of the Cinderella Consolidated Company as to the decision of the Board with regard to that proposition. Up to the time of going to press we have not received a copy of this document, but we understand that all work at the property is being suspended and that the directors are evidently preparing for a protracted period of idleness at this mine, which is of such enormous potentiality—despite its unlucky history.

* * * *

Nigerian and Waterberg Tin Fields Trust.

The vendor of the concern grandiloquently styling itself the Nigerian and Waterberg Tin Fields Trust, Ltd.—now in liquidation—is anxious to get into touch with shareholders in the venture who may be dissatisfied with the way their money has been spent. It appears from the audited profit and loss account of the venture that the whole working capital of £11,615 has been frittered away, and that the company is £900 in debt. There appear to be no assets, and the unfortunate vendor seems to have been particularly badly treated by the promoters. The concern is a London one; and the London financial papers might do the vendor and the other shareholders a real service by helping to bring them together in order to take joint action. It only remains to add that Mr. Pat Boyle, of Johannesburg, is the unlucky vendor.

* * * *

Transvaal and Delagoa Bay Investment.

Mr. S. C. Black, who presided at the annual meeting of the Transvaal and Delagoa Bay Investment Co., Ltd., last week, was able to lay a most gratifying report before the shareholders. Though modestly described by the chairman as "a favourable record of the past year's operations," the statement laid before the meeting reflected the sound and improving position of the colliery and other important assets of the company. The Transvaal and Delagoa Bay Collieries, with which the company is so closely identified, has enjoyed an excellent year, and but for the perennial shortage of trucks on the railway would have done even better. Of the other interests of the company Mr. Black said: "We have recently had offers for several of our farms which we did not entertain, but we are not averse to lease farms to industrious and capable agriculturists. Lately I paid a visit to Delagoa Bay and inspected our various properties. The progress at the port is not as rapid as I had hoped, but nevertheless, I found that there is a genuine effort in all circles for the continued development of trade. The present year has started quite satisfactorily, and we look forward with confidence to steady business and good results." That mere good luck is not accountable for this satisfactory showing is proved by a glance at the annual report of the company which reveals in every line signs of capable management.

* * * *

The Messina Line Completed.

As we go to press we learn that rails are now laid right on to the Messina Copper Mine, whilst the line is open for ordinary traffic up to Lilliput, which is about 25 miles from Messina. Completion of this important section of the S.A. Railway system may be said to mark the dawn of a new era in the history of the Northern Transvaal. Hitherto development in this area has been greatly hampered by lack of transport facilities, but now that the Pietersburg-Messina line has been finished and good progress has been made with construction of the Selati line there will be much more rapid exploitation.

The New Heriot Flooded.

The very heavy rains of last month resulted in the flooding of some of the stopes of the New Heriot Mine and in consequence there was a loss of £1,336 on the month's operations. The dewatering of the mine entailed a heavy expenditure, but it is understood that the stopes which were lost have been regained and that working conditions are again normal.

* * * *

The Main Reef Mines.

At the meetings of the Consolidated Main Reef and Main Reef West Companies, held in Johannesburg a few days ago, Mr. W. H. Dawe, who presided, reviewed the positions of these two sister concerns, both above and below ground, at considerable length and in much detail. In regard to profit earning it is noticeable that the Consolidated Main Reef, which a year or two ago was a less profitable concern than the sister mine, the Main Reef West, earned last year a profit of £139,415, as compared with £90,522 secured by the Main Reef West. Of first-rate importance to each mine are the sinking operations undertaken at each proposition during the past twelve months. At the Consolidated Main Reef meeting Mr. Dawe made reference to the vertical shaft of that company, which cut the reef in January and from which excellent development results were obtained. The eastern section of the property has continued to yield poor development results, but in the western and central areas good widths and values have been maintained. As to the Main Reef West in the east section of this mine, considerable delay in opening up the reef has been occasioned by a fault near the shaft. Development in this mine has been pushed ahead throughout the year, but unfortunately the work in the western section was in a poor zone. A comparatively small amount of work has been done on the South Reef, and this is due to the fact that the management deemed it impossible to devote more labour to this section of the mine.

* * * *

Mining Patent Suits.

Among the well-known mining men in attendance at the American Mining Congress is Charles Butters, says *Financial America*. who is identified with mining interest in America, South Africa, South America, Central America, Canada and the Antipodes. Mr. Butters is probably one of the best informed men in the world in regard to mining matters and his companies are constantly developing mines and perfecting mining methods. "Of course, I am always interested in mining congresses," says Mr. Butters, "I find at those gatherings more to interest me than in any other group of men with whom I meet. Mining is a constructive industry and a constructive man is always an imaginative and interesting character. I wish miners and mining corporations were less harrassed and annoyed by litigation than they are at present. It seems that whenever a mining process is improved or a mine developed that a deluge of litigation must follow. Just at present we are involved in litigation that affects the metallurgical industry. Our company—the Butters Patent Vacuum Filter Co., Inc. —is in court with the Moore Filter Co. The latter company is trying to collect royalties upon some alleged infringements of their patents. The Butters Company has its own patents and we intend to protect them. We intend also to protect the users of our process. Whenever we instal our system we give a guarantee that the user will be protected against payment of royalties for alleged infringement of other patents. Ours is the only company that gives such a guarantee—which is evidence of our confidence in our own rights. In connection with these law suits we are compelled to bring actions on our own account. We intend to sue all infringers of our process and we want the mining industry to know that a settlement with another company is not a settlement with us. One or two companies in Colorado have made settlements with another company, the Moore Filter Co., as I am informed, but following out the determined policy of the Butters Co., they will now be brought into court and compelled to settle for infringements of our patents. It is regrettable that miners cannot use the up-to-date method without being involved in lawsuits. But the litigation was not originally instigated by the Butters Co., and therefore we do not feel responsible for placing unnecessary burdens upon the miners. The blame must rest upon the people who attack us and who attack the miners in an effort to get at us. We intend to see our licences through and expect that a successful end to the litigation will be brought about speedily."

* * * *

Piggs Peak.

During the year ended March 31, 32,330 tons were mined and crushed in the mill of an average assay value of 8·91 dwts. Of these, 5,718 tons were from the new section and 26,612 tons from the old section mine. The average value of the 5,718 tons crushed was 13·74 dwts. per ton. The general manager estimates the ore reserves at 73,569 tons of an average value of 8·2 dwts. per ton. Prospecting operations were conducted during the year, with encouraging results. A reef similar to the Peak lode was located half a mile away from the present battery site, showing outcrop values from 5 dwts. to 19 dwts. Work here has been temporarily suspended owing to insufficiency of native labour. It is proposed to take up the careful and systematic prospecting of the Peak Concession during the current year. The total amount realised by the year's operations was £55,795, showing a net profit of £14,248, which is arrived at after debiting all charges on account of maintenance and upkeep to working costs, and writing off £8,866. A sum of £808 having been brought forward, makes a total of £15,056, which sum, with a view to strengthening the resources of the company, it is proposed to carry forward. The debenture issue has been reduced to £15,725.

* * * *

Sheba's Prosperity.

The Sheba meeting in London in mail week passed off in a very satisfactory manner. Mr. Thomas Smith, under whose chairmanship the company has resumed its prosperity, was able to give a most encouraging account of the work of the past year, which, indeed, has established a record in Sheba's history since the present company was founded in 1904. The cash reserves are £69,113. The value of the gold won was £160,328 as compared with £148,074—an increase of £12,254. The grade of ore has improved and hence the increased yield of gold by 2,748 ozs. The total profit was £55,532, out of which £47,204 was paid in dividends. The amount of £11,489 has been carried forward. The Rosetta is the only property that has not given satisfaction—amply compensated by the continuance of the rich shoot from No. 7 to No. 8 level of Zwartskopje mine and by improved developments in Intombi mine. The ore reserves are about the same, but there is the prospect of considerable additions to them within the next year or two.

* * * *

Luipaards Vlei.

The Luipaards Vlei Estate and Gold Mining Company is recovering, as shown by the annual report, the profit for the year ended 30th June last being £29,950, as compared with £19,600 in the preceding period and £24,100 for 1910-11. The advance is due to cleaner mining and more efficient work generally, resulting in a recovery of 21s. per ton, as against 18s. 2d. from current ore in 1911-12. Labour, in one shape or another, is chiefly responsible for a rise of 1s. 2d. per ton in costs. After writing off £14,000 to depreciation, the profit and loss credit stands at £102,800. The actual cash surplus amounts to £22,000, and of this about one-half is to be expended upon the acquisition of two tube mills, which will raise the crushing capacity by 4,000 tons per month to 20,500 tons—provided adequate labour can be secured. An increase in the plant is considered to be justified by the ore reserve position—581,800 milling tons fully developed, value 5·51 dwts. per ton, and 91,800 tons partially developed, value 4·7 dwts. The fully developed material would represent nearly three years' work at the 1912-13 rate. Good values have been disclosed upon reopening the upper levels in the old Windsor section, and encouraging results have lately attended developments on the Battery reef. It certainly looks as though the company has turned the corner; though a resumption of dividends cannot be expected for some time to come.

TOPICS OF THE WEEK.

RAND VALUES IN DEPTH.

In our last issue we drew attention to the important views on Rand values in depth expressed by Mr. H. H. Webb in his report to the Consolidated Gold Fields on "selective mining." Last week we drew attention to Mr. Webb's admission that in so far as the mines of his group were concerned "the average value of the ore developed over large areas has been getting lower as greater depth is attained," and we pointed out that coming from a gentleman of Mr. Webb's wide experience it will certainly be seized upon with avidity by those critics of the Rand who have for years past proclaimed their faith in the doctrine that great depth of working connotes impoverishment of values on the Rand as well as on every other mining field. Mr. Webb admits that there are more favoured sections of the Rand than those worked by the Gold Fields management, and, as we pointed out before, it is just this further qualification that, when analysed, may refute the idea that the Main Reef series as a whole is consistently becoming less profitable as the banket beds are being followed to greater depths from outcrop. Despite its qualifications, Mr. Webb's opinion will, however, hardly go unchallenged. Another Gold Fields engineer, Mr. C. O. Schmitt, two years ago, in a paper read before the Institute of Mining and Metallurgy and the Chemical, Metallurgical and Mining Society of South Africa, was severely criticised for drawing some wholly unjustifiable conclusions on the subject, which he embodied in a beautiful but untruthful curve, showing a future progressive diminution in Rand values with depth. It will be remembered, moreover, that after the E.R.P.M. troubles of 1911 much capital was made out of the fact that Mr. F. Hellman, in giving evidence in camera before the "Creswell Commission" four years previously, had given utterance to some views in support of the declining of values theory. Mr. Creswell was anxious to know something definite, and asked: "Well, Mr. Hellman, will you tell us what are your grounds for holding that the grade is going to be very much lower in the future than in the past?" Answer: "I do not know how much lower it is going to be. I cannot forecast that; but I can say that the decrease in all the mines I know of has been most marked, as reflected in the output." "As reflected in the output"—this is Mr. Schmitt to a letter, and as an argument it is beneath consideration. It is unnecessary to pursue the subject of the evidence further. The opinion as to the falling off in grade on the Rand generally was unsupported by any statement that could be taken as proof. We do not refer to a moderate diminution which is not an unlikely circumstance, but a decrease in values such as is suggested by the remark that the lowering of grade is in proportion to the depth, or such as may be inferred from the output. It was remarked by the witness: "To-day we realise the true state of affairs, which is not very serious, but which makes a great difference." There was no explanation of the real character of the position, or how it was at the same time not very serious yet one which made a great difference. It is now six years since the Commission listened to these views, and yet it was only recently that Mr. Hugh F. Marriott said that, "As far as reef values were concerned, there was not substantial evidence to-day, even for the most confirmed pessimist to prove a general deterioration." His opinion in this respect was not merely advanced as a benevolent idea, "but was based on the most complete evidence it was possible to secure, that of the assay values of samples of actual reef widths taken throughout all the mines and correlated." In other words the evidence in support of Mr. Marriott's view was different "in toto" from that upon which Mr. Hellman ventured to suggest as much as he did. Whether he really intended to suggest what the critics appear to take for granted may be doubted. There is no justification, at any rate, for the assumption that the evidence was so very compromising as regards the Rand generally, that it was advisable carefully and deliberately to withhold it from the public. Even if it were, the more recent developments in the deeper deeps of the Main Reef series, the City Deep for instance, the Village Deep, and the Van Ryn Deep, should be sufficient to show the futility of arguing for a steadily diminishing grade. Mr. Hellman's unsupported conclusion was based on evidence of mining to a depth of probably 6,000 feet from the outcrop on the incline, at the outside; the Brakpan Mines have obtained excellent ore from anything between 11,000 and 14,000 feet on the incline. The subject is, of course, as complex as it is interesting and important. Mr. Webb's report will, doubtless, evoke much criticism and discussion, and we hope to revert to it in our next issue.

"FIRST AID" AND THE ST. JOHN AMBULANCE ASSOCIATION.

The fact that the St. John Ambulance Association has in the newly-formed Red Cross Society an active and aggressive competitor appears to have little effect on the annual report of the older body, issued this week. The report, read in conjunction with the cheery review of the year by Colonel Parrott at the annual meeting, furnishes an effective reply to the critics of the St. John Association. The railway work of the Association, of course, bulks large in the report, but we deal only with its mining activities. In submitting their report for the year ended 30th September, 1913, the Committee of the Centre refer to "the work of the most active year yet experienced in the Transvaal." Classes in first aid have been held in almost every district of the Province, and the numbers who have obtained certificates far exceed those of previous years, and constitute an easy record of all oversea centres in the Empire. Although this evidence of great activity in the Transvaal relates to one of the smallest and least populated Provinces in the Empire, it should be remembered that the increasing expansion of the work is largely due to the promulgation of the Government Regulations requiring a certain proportion of miners to hold a first aid certificate. This unusual pressure thrown upon the administration of the centre was promptly met by the doctors and the small staff at the office of the centre in such a way that practically all the miners throughout the Transvaal coming under the regulations were enabled to qualify, and so satisfy the requirements of the Mines Department. In this special work the centre says it received most valuable help and co-operation from the mine doctors, the Chamber of Mines, the mining houses and the mining staffs in all the metalliferous, diamond and coal mining areas of the Transvaal; and on many of the mines the candidates expressed a desire to come under the St. John Brigade organisation, in order that they should in this way maintain their efficiency, and furnish sections specially told off for the practice of rescue work, as the Brigade Commissioner has so constantly urged during the past eight years. In February last it was evident that the majority of the miners in the Transvaal coming under the Government Mining Regulations had secured the qualifying certificate of this Association. It was then pointed out to the Chamber of Mines that, in view of the forward condition of the work of this centre in first aid teaching, divisons of the St. John Ambulance Brigade should be formed on the separate mines, in order to enable the first aiders to maintain their efficiency by systematic and regular practice in first aid work, and more particularly in telling off sections of those divisions for the special study and practice of "rescue work." The Chamber at once approved of this proposal, and circularised the different mining groups, asking them to give what assistance was necessary to complete the work on these lines. With equal promptitude the mining groups responded, and a number of divisions were formed and registered. Here the report hints at a competitor. It says: "A little later, however, on many of the mines there had grown up a desire to delay further action pending the consideration of proposals from another society then in course of formation." All the mines in the Transvaal where classes had been held were circularised from the office, and the organisation of the St. John Ambulance Brigade was fully explained. The Brigade was established in 1887 to meet the requirements of ambulance work in all industries, and has since the date of its formation been in active operation over the whole Empire, and has a record of effective work in mines and other industries that is recognised the world over. The report shows that the Chairman, the Hon. Secretary, Mr. E. C. Lowe, and Mr. V. E. Davis, District Secretary of the Brigade, attended numerous meetings during the year on the mines and in other localities, in order to assist in forming classes, and to urge the vital necessity of organising the first-aiders who have already passed their examinations, and many members of the Committee are assisting in the same way. Of the 1,984 certificates and awards issued during the year, 1,863 were issued to mine workers, and a study of the figures contained in the report at once suggests the vital importance of organising these first-aiders in such a manner that the services of this great body of men, distributed over all the important mines of the Transvaal, may not be lost through want of systematic training in the practical application of their first aid knowledge, suited, not only to the conditions met with generally in the Transvaal, but to the special and varied conditions known to exist in the individual mines of the several districts. Colonel Parrott pointed out at the annual meeting:—

> Where Divisions have been formed there is a guarantee that both first aid and rescue work will be promptly carried out under conditions of the highest efficiency. The brigading of first aiders on the mines in Britain and all Oversea Dominions under the St. John Ambulance Association has been carried out for many years, and in recent years the work of the Brigade members has been further extended to take up the special section of "rescue work" on mines and the formation of "voluntary aid detachments." Very much on the British lines, the Continental, American and other countries have also systematised this work; in all cases under the guidance of organized, chartered and experienced associations of long standing. The administrative machinery for carrying out this more complete and systematised ambulance work, not only in mines, but in all other industries, has been worked out by the Executive and Medical Committees of these old-established organizations in long years of practical experience, so that to-day the trained bodies can effectively deal with the peculiar forms of accident to which the industry specially renders the workers liable, much in the same way that we now get more effective work done in fire disasters by trained fire brigade members, whose experience enables them to deal with all the forms of fire problems which occur from time to time. Nothing could serve to illustrate this point more forcibly than the operations of the Johannesburg Fire Brigade, in which the skilled work of its members has so often been tested with the most effective results, not only in saving property, but in saving life. Colonel Parrott goes on to point out that in the Witwatersrand area we are confronted with the greatest concentration of conditions calling for humanitarian action, so far as it relates to metalliferous mining, that has perhaps arisen in modern times; and these conditions demand that we shall do everything in our power to mitigate the suffering that so frequently appeals for help along the vast extent of the mines of the Main Reef and in other districts. Whilst everything possible is done by the Government and mining authorities to bring the accident rate down to the lowest minimum, this rate is still high, but the consequences may be modified enormously by the creation of an organized body of ambulance men, who have now entered the first stage by acquiring a knowledge of first aid. This is the point which the activities of the St. John Ambulance Association has now reached in the Transvaal after seven years of very strenuous work, and it now remains to complete the organizing sections of the work so that the ambulance efficiency on the mines, as well as the railways, the tramways, the factories and all other industrial bodies, where large numbers of men and women are employed, may be as thoroughly reliable as the system of fire brigades, which so promptly meets the calls at any hour of the day and night.

We can only echo and endorse these hopes of Colonel Parrott, and trust that the success of the new society will in no way damp the ardour or lessen the energies of the older Association, which to its long and honourable traditions can now add so excellent a record for the last year's work.

PHTHISIS ACT REFORM.

Recent political party conferences at Capetown have devoted a considerable portion of their time to debating the Miners' Phthisis Act and the possibilities of improving it. That the first year's working of the Act has shown it to possess several shortcomings is now generally agreed, but opinion is divided on some of the suggestions put forward to amend them. The most noteworthy of recent contributions to the discussion of the subject came from Sir Lionel Phillips, who has shown himself a convert to the "single class" method of apportioning phthisis compensation, as favoured by Dr. Macaulay and advocated by this paper. In a striking speech delivered at Capetown last week, Sir Lionel insisted that it was not only a question of monetary assistance that had to be considered, and he was not at all sure if instead of giving a man £8 a month—which was a very small sum to live on in the Transvaal—he were given £10 or £12 a month, that very much would have been done. The real object, he said, should be to get hold of the miners when they were in the early stages of the disease, and put them to work at something else. A man in the early stages of phthisis has merely absorbed a certain amount of dust into his lungs, but he was just as efficient as anyone else who had not dust in the lungs. It was on that ground that the Transvaal Commission recommended that the men should be got hold of when they were in the early stages of the disease, and not be allowed to go underground again. But that procedure was not adopted in the Act for fear that a large number of men might be thrown out of employment without the possibility of their obtaining other work. In addition to giving the men more money assistance, he thought they should be provided with some means of livelihood. A miner could not be put on the land with any chance of success without first being trained. Then the compensation money could accumulate while they were being taught, and given them as a portion of the working capital they would require when they started farming on their own account. He was trying in a small way to do something in this direction. It was difficult, however, for the representatives of companies to deal with matters of this kind on their own initiative. He must also not lightheartedly dip into the pockets of other people. Up to the end of April last, although the Act had been in force only nine months, the sum of £655,000 had been allocated in compensation. At this rate there would, for the 16 months up to the end of this month, be paid something like a million pounds in compensation. As an employer, went on Sir Lionel, he welcomed any step which would tend to the elimination of the disease, and to the welfare of the people concerned in the industry. But they must go warily. There should be some inquiry as to the nature of the provision to be made to the men. There was no more difficult matter than the diagnosis of miners' phthisis in its early stages. The result had been that there were numbers of cases of men who had been taken out of the mines as sufferers from miners' phthisis who had received £8 a month as compensation for a year or more, and were now back again working in the mines. Then people who had received lump sum payments in compensation had also returned to mining work. The best results, he concluded, would be obtained by not having two rates of compensation at all, but directly it could conclusively be shown a man had phthisis he must be removed from underground work. These really constructive proposals of Sir Lionel Phillips will doubtless be repeated in Parliament, and, coming from such a quarter will obviously carry great weight. If the Act is to be amended it is eminently desirable that the advice of the leaders of the industry should be taken and that the whole measure be now put into final, permanent shape, obviating further tinkering with its provisions in future.

Selukwe Columbia. A profit of £14,600 is disclosed by the accounts of the Selukwe Columbia gold mine for the year ended 30th June last. This sum is equivalent to 10 per cent. on the issued capital, but no distribution amongst the shareholders is proposed, and it is evident from the directors' report that dividend prospects are still rather remote. On the original Yankee Doodle property the ore reserves are almost, if not quite, exhausted by now, and it is estimated that to bring the new claims acquired about nine months ago to the producing stage will require an expenditure of £1,500 a month for the next twelve or fifteen months. This is apart from the cost of either erecting an aerial haulage from the new property to the existing mill or transferring the mill to the new ground, whichever may be decided upon as the more economical method.

THE DIVIDEND AGGREGATE FOR 1913.

Some Further Aspects—Profits of Companies Declaring First Dividends in 1912 Discussed.

In last week's issue we dealt briefly with the profits earned by the various groups during the past few months, and we also indulged in some little surmise as to what the outstanding features of the dividends of Rand gold mines for the year ending December 31st, 1913, which will be declared this month, are likely to be. As we then remarked, it is probable that the distribution of a larger sum of money by the mines of the Barnato group will be an outstanding feature. The subsidiaries of the Johannesburg Consolidated Investment Company are now earning profits at the rate of a million and a quarter per annum, and it can safely be assumed that the Barnato group dividend aggregate for the current year will be materially greater than that of 1912. Two new names may be expected to appear in the dividend list—the Consolidated Langlaagte and Van Ryn Deep, each under the control of the Johannesburg Consolidated Investment Company. It is difficult to conceive any other companies, in addition to the Consolidated Langlaagte and Van Ryn Deep, as being likely to appear on the dividend list for the first time this month.

LAST YEAR'S NEW DECLARANTS.

Last year five Rand gold mines announced a first distribution, viz., Bantjes, Brakpan Mines, City Deep, Modderfontein B., and Randfontein Central. These concerns paid out in the aggregate £862,444. It is not to be expected that the two new declarant companies of this year will pay out anything like this sum, and it should at the same time be pointed out that two of the five concerns that announced their first dividends in respect of last year's operations—the Brakpan Mines and Bantjes—have earned lower profits of late than were secured last year.

BRAKPAN MINES.

The position in regard to Brakpan seems to be specially worthy of study. Development at this mine for four months out of the first ten has been poor, although not less so than during the greater part of 1909 and the early portion of 1910. Profits have been correspondingly affected, not so much perhaps by development disclosures as by the trouble prevailing at most mines along the Reef during the past month or two —shortage of unskilled labour. The returns secured by Brakpan during the last six months have been as follows:—

1913.	Tons.	Revenue.		Cost.	Profit.	
May	56,439	£80,754	28/5	18/9	£27,067	9/7
June	53,000	76,637	28/7	18/6	26,889	10/2
July	39,630	54,932	27/5	23/5	8,005	4/1
August ...	50,006	68,851	27/4	18/7	21,768	8/8
September ..	48,300	66,609	27/4	19/0	20,202	8/4
October ...	49,545	63,852	25/8	18/9	16,833	6/10

Last year the Brakpan Company paid a dividend of 40 per cent. and for the first six months of this year it paid out 20 per cent. What distribution will be announced in a couple of weeks' time it is difficult at the moment to predict. It certainly looks as if 10 per cent. at least will be distributed. The rate may, in fact, be as high as 15 per cent., but judged by the profits made since July last—the month of the strike—it seems reasonable to expect that the December declaration will be somewhat less than that of June.

THE BANTJES COMPANY'S RETURNS.

The Bantjes Consolidated has had a difficult year, and the acute shortage of native labour has recently affected returns severely. The profit for the quarter ended with September was £10,406, and was lower by £1,210 than that earned in respect of the operations for the preceding three months. This company paid out a one shilling dividend in June last, 5 per cent. on a capital of £502,306.

CITY DEEP.

Returns of the City Deep Company always attract attention. The financial position of the City Deep at the end of September may be expressed as under:—To Government tax (estimated)—For the six months ended 30th June, 1913, £14,479; for the three months ended 30th September, 1913, £5,600; total, £20,079; dividend account—interim dividend No. 2 of 10 per cent., declared 26th June, 1913, £125,000; balance carried to balance sheet, £184,208. The proceeds from the sale of 15 claims to the City and Suburban Gold Mining and Estate Company, Ltd., and the expenditure on undermining rights annuity (£4,920), development and equipment account (£55,499) will not be transferred until the close of the financial year. Recent returns have been:—

1913.	Tons.	Revenue.		Cost.	Profit.	
May	42,300	£82,695	38/6	25/5	£27,143	12/10
June	37,900	72,798	37/11	27/2	19,522	10/4
July	33,700	70,096	40/11	27/10	21,395	12/8
August ...	33,900	66,299	38/4	26/7	19,766	11/8
September ..	36,000	68,788	37/6	25/8	20,599	11/5
October ...	37,200	71,608	37/4	26/8	19,494	10/6

In June last the company paid a dividend of 10 per cent., and it looks as if this would be maintained for the current six months.

RANDFONTEIN.

As to Randfontein Central this company has not yet regained the position in regard to profit that obtained previous to the strike. The June profit was £83,480, that for July £68,524, for August £84,043, for September £78,456, and for October, £73,458. Shortage of native labour has been acutely felt at this property, too, so much so that it is understood the management has decided to suspend milling operations on Sundays. Nevertheless, the company should be able to declare a dividend next month, which will not be less than that declared in June last, 1s. 6d. per share, or 7½ per cent. on a capital of £4,193,700.

MODDER B.

Of the five new entrants into last year's dividend list, the Modder B. has made the best showing recently. The capital of this company is £700,000, and last June a 20 per cent. dividend was declared. The Modder B. continues to mill ore of high grade value, whilst working expenses have been reduced to a creditably low level. The following table shows monthly tonnages milled, costs and profits, etc., since May last:—

1913.	Tons.	Revenue.		Cost.	Profit.	
May	36,100	£66,927	37/1	15/5	£38,859	21/6
June	35,210	71,944	40/10	15/9	43,474	24/8
July	27,100	66,524	45/6	18/8	40,480	29/10
August ...	33,600	68,049	40/6	16/1	40,476	24/1
September ..	35,500	74,939	42/3	15/9	46,124	26/0
October ...	37,250	75,588	40/7	15/9	45,316	24/4

We have no official information on the subject, but it would seem that the company will at the end of the year be in a position to pay out at least as much as in June last, but how much will be carried forward for purposes of extending operations is, of course, at this juncture, an unknown factor.

City and Suburban.

The following are the results of the City and Suburban Company's operations for November:—Tons milled, 24,700; gold recovered, 10,929 fine ozs.; profit, £19,167.

BLAAUWBOSCH DIAMONDS.

Annual Meeting—Excellent Position of the Company—Dividend Record and Review of Operations.

At the annual meeting of this company, held in Johannesburg during the week, Mr. H. de V. Steytler, who presided, remarked, *inter alia*:—

As you are aware, the issued capital of the company still stands at £24,500. Without increasing the same during the past year, we have achieved a great deal. We have completed an up to date direct treatment plant, adding during the year a set of six foot rolls, and extra motive power by installing an additional suction gas plant. The whole plant is in excellent condition, and has given very little serious trouble. The question that has been under the consideration of the board for the last three months is whether the company, by its direct treatment plant, is obtaining the best possible extraction at the lowest cost per load. I for one am of opinion that a considerable portion of the small diamonds are sent to the tailings dump, and that this fact is demonstrated by the falling off in the yield, and accounts in a great measure for the increased average price obtained for our diamonds. Shareholders may, however, rest assured that this phase of the direct treatment system, so far as our mine is concerned, will be thoroughly looked into and the difficulties arising solved, if possible. For the period of twelve months ended 30th September, 1912, we treated 55,061 loads, at an average cost of 5s. 0·3d. per load, the loads so treated yielding 15,084½ carats, which realised £17.715. For the period of twelve months ended 30th September, 1913, the year now under review, we treated 102,125 loads, at an average cost of 3s. 11·2d., yielding 27,030 carats, which realised £43,412 14s. 2d. From these figures it will be perceived that the cost per load treated was reduced from 5s. 0·3d. to 3s. 11·2d., and that the value per load increased from 6s. 5·2d. to 8s. 6d., and the value per carat increased from 23s. 5·8d. to 32s. 1·2d., whereas the yield per load decreased from 27·39 per cent. to 26·46 per cent. To enable mining to be carried on at the present level in safety, it became necessary during the year to haul approximately 2½ loads of reef to one of mine ground, and from the following figures it will be seen that this policy has been in practice for some time past. During the previous year 166,302 loads of reef and waste were hauled, as against 55,061 loads of mine ground washed. This year no less than 252.753 loads of reef and waste were hauled, as against 102,125 loads of mine ground washed. The cost of the reef, *i.e.*, 5·2d., is included in the 3s. 11·2d. cost per load washed. On referring to the accounts, it will be seen that the nett profits made during the previous year amounted to £3,874 16s. 2d., whereas the nett profit made during the year under review amounted to £23,325 5s. 1d. The manager reports that he has commenced to open up the 6th level with a 32 feet face, and that there is still a large quantity of blue to be mined and hauled from the 5th level, and that he has got the reef well in hand. To ascertain whether there was any appreciable shrinkage in the mine, the board instructed the manager to put down a shaft to a depth of 200 feet from the surface at a point approximately midway between the northern and the southern boundary, and to drive across the mine from east to west. This work was only completed about fourteen days ago, and I have much pleasure in stating that it was found that at that depth there was no decrease in the width of the mine. This is indeed a very important factor in taking into consideration the life of the mine, but, as stated to you repeatedly, it is not only this factor which must be taken into account, but also the value of the blue ground. Given a continuance of the present values and the present dimensions, there is no saying how long we may still be able to safely carry on mining operations at a profit by open-cast and by underground workings. This is, however, one of the problems that I am not prepared to make any definite statement about, as so much will depend on the diamond market.

In the course of his report, Mr. G. H. Alexander, the retiring manager, states:—During the past year the mine has been worked down to a depth of 150 feet. We are now hauling from our fifth level, with a face of 35 feet. A considerable quantity of blue ground is still available on this level. The stoney nature of the ground encountered towards the south portion of the mine considerably hampered the work. but there is no doubt we found our best diamonds out of this stoney part. A shaft was also sunk from this level to a depth of 50 feet, when two drives were started, the one east, the other to the west. This work is proceeding as quickly as possible. The blue ground taken from the shaft and drives looks promising. You will notice from the returns that a large quantity of reef has been hauled during the year, and it will be necessary to continue this work for some time. In April last it was found necessary to erect the 6 feet rolls, in order to crush the blue ground finer, also another elevator of 20 feet, making the gear very complete, and it is working well; but we found, by adding these additional rolls, that the engine was hardly able to drive the plant. It was then decided to erect another gas engine of 28 h.p. to act as an auxiliary, so now the two engines drive the plant easily. The water has been holding out well. We get our principal supply from the new borehole. It will, however, be necessary in the near future to deepen the well made near the borehole and put in drives; this would give a much larger supply. We have experienced the usual difficulty in keeping up our supply of native labour; the average number employed has been 182 per month during the year.

Transvaal G.M. Estates.

During the quarter ended September 30 the Transvaal Gold Mining Estates made a total profit of £77,510, made up as follows: Central Mines, £63.266, or 38s. 11·2d. per ton; Elandsdrift Mine, £7,417, or 71s. 5·8d. per ton; Vaalhoek Mine, £3,920, or 13s. 11·1d. per ton. Profit from accumulations, £866; sundry revenue, £1,804; and interest, £1,065. Against this total is charged: European and head office expenses, £3,363, and debenture interest, £1,159. Capital expenditure amounted to £1,452. At the Central Mines the development footage decreased by 1,668 feet, and the tonnage crushed by 5,700 tons as a result of the serious shortage of native labour experienced during the quarter. The working profit at the Central Mines decreased by £8,329 as compared with the previous quarter, while at Elandsdrift and Vaalhoek Mines, where the native labour supply was satisfactory, the working profits increased by £2,205 and £929 respectively. Though in the aggregate a decrease of £5,283 is shown, the satisfactory working profit of £72,985 was earned for the period. At the Central Mines, the development in Duke's Hill South has continued without interruption, the three drives to the dip continuing to open up ore of more than average value; good progress is being made at all ends. The connection with No. 9 adit has now been effected, and the first connection with Columbia Hill will be made within a few weeks, thus facilitating further development in this section. The second connecting drive between Columbia Hill and Duke's Hill had been stopped, further work not being considered advisable, as no payable ore had been exposed. The distance between the faces of the third connecting drive is now 730 feet. This connection is being proceeded with as speedily as possible, as is the main road to the dip and the connections in the Peach Tree Mine to extend development operations towards the dip in this section. In the Columbia Hill section east of the Beta dyke and parallel thereto the reef continues to give good values, and is being opened up as fast as circumstances permit. In Iota the main drive is at present in badly faulted ground, which has dislocated the reef. It is anticipated that on intersecting the reef again it will be of good value, having been exposed with good results from that side of the hill to which this drive is being carried. The development of the Theta continues to give good results on the bottom reef on the east side and also in the centre of the hill, and the main crosscut, which is being driven towards the bottom of the syncline, which has been proved to contain ore of high value, is now approaching this fairly large and valuable pocket of reef. This ore will soon be available for the mill. At the Graskop and Brown's Hill Mines the position does not call for any special comment. At Pilgrim's Creek the good-looking reef intersected by the lower drive, referred to at the annual meeting, is now being opened up with encouraging results. The higher drive is still above the reef horizon. Owing to the shortage of native labour, development operations generally were somewhat curtailed, and work was concentrated at the more important points. So far as can be judged, however, there has been no material change in the position of the ore reserves. The labour position has improved during October, but not to the extent expected. When the plouging season is over in November there should be further material improvement. At Elandsdrift Mine development is being pushed. Good values are being obtained over a considerable area in this section, which looks distinctly promising. The satisfactory results have been secured in the dip section, in which development position has improved. At Vaalhoek Mine satisfactory results continue to be obtained. The River and Nek sections are continuing to open up well, improving the development position.

Kleinfontein Group.

The following are the results of operations on the New Kleinfontein Company's property for November:—Stamps, 200; days run, 28·391; tube mills, 4: tons milled, 48,500: gold recovered, £62,418; profit, £21,728; working costs, 1s. 0·651d.; total working costs per ton, 16s. 9·349d.; capital expenditure, £643.

Manicaland Output.

The mineral output of the Companhia de Moçambique, Manicaland, for the month of October, 1913, was as follows: Reef: Mill: Gold won (fine gold, 385 ozs. 6 dwts. 5 grs.; tons crushed, 1,841, value £1,618 5s. 1d. Concentrates (estimated): Gold (fine gold), 35 ozs. 10 dwts. 5 grs.; tons, 5·698, value £150 18s. 4d.; silver and lead value, £31 11s. 11d. Cyanide: Gold recovered (fine gold), 14 ozs. 5 dwts. 19 grs.; tons treated, 126, value £60.

PROGRESS OF THE "SAFETY FIRST" CAMPAIGN.

Issue of Important Pamphlet—Some Points of General Application—Lessons from the States.

ANOTHER step in the progress of the Rand "safety first" campaign, described in our last issue, is marked by the issue this week of an important pamphlet containing some lessons from the United States. In a foreword to the brochure, it is stated that last year (1912) in Transvaal gold mines there were 2,296 accidents, 333 white persons were injured (including 54 killed); the same figures for natives were 2,478 injured (including 805 killed). The accident rate for metal mines is much the same here as it is in the United States. In 1911 the Transvaal rate was just above and in 1912 (a record good year) is stated to be below the United States of America; both countries, however, are far above the British rates. The articles which follow show how an American Corporation reduced accidents to its workmen by 43 per cent. in five years, and although the details given relate to workshops the general principles apply equally to mining. A pamphlet issued from the Bureau of Mines, Washington, U.S.A. (a Government document mark you) uses these words in its preface:—"In discussing the causes of such accidents as those from falls of roof and of coal little is to be gained by declaring that the miners or that the mine owner is mostly to blame. As a matter of fact, neither the mine owners nor the miner acting alone can entirely prevent such accidents. Each has his part to do; each is responsible for doing his part well. If the miners will co-operate with the mine owner and the mine owner will co-operate with the miner in an earnest effort to prevent these accidents, many lives will be saved. Let both the miner and the mine foreman co-operate with the inspectors in their efforts to safeguard life. Let 'safety first' be our motto and guide in practice as well as in theory." The foreword adds:—Can't we try to do the same? It is quite possible if all will help! Anyway it pays you to do your work the safe way. The body of the pamphlet consists of an extract from *The Engineering Magazine* (New York) of July, 1913, entitled "The Conservation of the Worker," by Arundel Cotter. By way of introduction the editors point out:—"The 'safety first' movement is now being propagated into all forms of employment which involve elements of danger. Railroads throughout the country are taking up and repeating the slogan. Large—and small—industrial establishments are realising the value of their workmen, and are bending every effort toward conserving that value. The United States Steel Corporation, the leading exponent of the movement, as Mr. Cotter points out, is endeavouring: First, to instil the germs of caution into its workmen; and second, to render its machinery, as far as possible, 'fool proof.'" The writer of the article quotes some American statistics and refers to liability laws introduced by legislators, and then proceeds as follows. (We quote a few noteworthy passages.) While legislators have been groping about with more noise than results, it was left to the employer to find the real solution of the problem. The movement, let us believe, started from purely humanitarian motives, but as it grew the men who tried it began to realise that, just as the death of a slave meant a loss to his owner, the death of a trained workman meant the breaking of a well-oiled cog in the employer's business machine, and that it was cheaper to prevent than to repair. Thus common business foresight helped the movement along, and the whole spirit of the movement is that it is better, and cheaper, to pay for safety devices than to pay damages afterwards. With these two arguments, the appeal to the heart and to the pocket-book, the "safety first" propaganda has grown steadily year by year, spreading from industry to industry, and is now beginning to make itself felt and recognised by the whole industrial world.

Recognising that care on the part of the workmen is more than half the battle, the committee begins its work with the man applying for a job at the steel mill. The slogan "safety first" is kept before the worker even before he is introduced into the plant. At the several employment offices of the corporation's subsidiaries there are large signs warning the would-be steel-maker that every man is required to be careful, not only for his own safety but for that of others; and these signs are printed in a number of languages. Lest the employee should forget these warnings, large signs, illuminated brilliantly at night, are posted over the entrances to the mills, and these constantly repeat the warning to the worker as he goes to his labours. These illuminated signs were suggested by one of the workmen and the suggestion was eagerly adopted, the man being rewarded liberally for his idea. The wording, or "mottoes" on these signs are changed from day to day. A few of the most striking are given:—

"The prevention of accidents and injuries, by all possible means is a personal duty which everyone owes, not to himself alone, but also to his fellow-workmen."

"Remember, it is better to cause a delay than an accident!"

"Let every employee make himself a committee of one, to prevent some one accident."

"Look out for the other man! You might hurt him."

"Warn a man danger is near. He may know all about it; if so, no harm is done; if not, you may save him from injury."

"Foremen—Carelessness is dangerous! If workmen insist on being careless, discharge them."

These are only a few.

A prime principle of the Safety Committee was expounded by one of its members thus: "Not only is an ounce of prevention worth a pound of cure, but rather let us have a pound of prevention than an ounce of cure." And that this is lived up to as far as can be, is evidenced by the fact that in one building a sum of $32,500 was spent to prevent accidents to lamp trimmers and window cleaners alone.

What has already been done by some companies demonstrates clearly that an appreciable proportion of the present human waste from accidents is unnecessary. The employer should take advantage of every means at his command to stop it and, what is just as important, the worker himself must be educated to use the means provided. But it is not a matter that should be left entirely at the option of the employer, and the use of safety devices and other precautions should be made compulsory. A national campaign would inevitably accomplish far more than can be done by any individual employer, or employers working together, and it would result not only in saving to the nation an incalculable sum annually, but it would mean less suffering, less misery, fewer desolate homes.

Knight Central.

During the quarter ended September 30 the Knight Central made a profit of £2,532 5s. 11d., equal to 9·60d. per ton milled. There was expended on capital account an amount of £6,468 7s. 4d. The east shaft has been sunk 6 feet to a total depth of 4,602 feet. The 15th level station has been equipped with a development rock box. The west shaft has been sunk 59½ feet to a total depth of 4,518 feet, and timbered to 4,375 feet. On development there was accomplished a total of 2,571 feet. Exclusive of main crosscuts, ore passes and prospecting work, 2,073½ feet or 90·80 per cent. of the development work has been on reef. Altogether, 1,970 feet have been sampled. This comprises 810 feet or 41·12 per cent. averaging 6·6 dwts over an estimated stoping width of 55 inches, and 1,160 feet or 58·88 per cent. averaging 2·1 dwts. over 54 inches. Of the total footage sampled on reef south of dyke during the quarter, 965 feet is from drives south of the Simmer dyke. This footage averages 3·1 dwts over 52 inches, and includes payable patches totalling 220 feet averaging 6·7 dwts. over an estimated stoping width of 48 inches. Since driving south of the dyke was first commenced, 1,320 feet averaging 3·1 dwts. over 55 inches have been sampled. The aggregate of the payable patches, so far exposed, is 365 feet (or 27·8 per cent.) averaging 5·8 dwts. over an estimated stoping width of 54 inches. At the 16th crosscut from the east shaft there remains approximately 130 feet to reach South Reef. Ore reserves at September 30, 563,300 tons at 6·1 dwts. over 61 inches. Pending further information, no ore south of the dyke has been included in the above estimates.

THE YEAR WITH THE FERREIRA DEEP.

Points from Annual Reports—Record Crushing and Profits Earned—Net Profit, £703,384—Serious Labour Shortage.

THE operations for the year ended September 30 at the Ferreira Deep represent, for the first time, the results of a twelve months' working of the amalgamated company, the tonnage crushed of 647,550 tons and working profit of £694,553 6s. 6d., being the highest figures respectively yet recorded by this company. The capital expenditure for the year amounted to £5,481 2s. 2d. It is estimated that a sum of £6,370 will be required to complete the work at present authorised by the directors, the chief item being the centralisation of the pumping plant. The amount charged out monthly to working costs for development redemption exceeded the sum expended during the year by £17,880 2s. 5d., or 6·6d. per ton milled. In view of the fact that the board is advised that 1s. per ton milled, the amount now being charged, will be amply sufficient to meet the cost of all future development, this excess has been transferred to the credit of working expenditure and revenue account, but is not reflected in the working costs per ton given in the reports. South African Government Stock shows a reduction of £10,000, being a sale of Cape Government four per cent. Stock at par. A net profit of £703,384 12s. 7d. was earned during the year, to which must be added the balance of £125,105 0s. 4d. brought forward from last year, and an amount of £15 9s. 9d. in respect of dividends unclaimed for a period of five years, now forfeited in terms of the Articles of Association. The total, £828,505 2s. 8d., has been dealt with as follows:—Expended on equipment account, £5,481; Government tax on profits, £63,121; interim dividends, Nos. 20 and 21, £490,000; amalgamation and liquidation expenses in connection with Ferreira Gold Mining Company, Ltd., £1,635; leaving balance unappropriated and represented by cash and cash assets, less liabilities, £268,267.

Mr. Palmer Carter, the acting consulting engineer, writes:—In most cases the results obtained show improvement over those of the previous year, which included nine month's results only of the amalgamated company. A comparison of the more important features of the year's work as compared with the previous period is as under:—Tons mined: 1912, 663,081; 1913, 744,971. Per cent. sorted: 1912, 15·7; 1913, 13·1. Tons milled: 1912, 559,800; 1913, 647,550. Yield per ton milled: 1912, 39s. 11d.; 1913, 41s. 6d. Cost per ton milled: 1912, 21s. 3d.; 1913, 20s. 1d. Working profit per ton milled: 1912, 18s. 8d.; 1913, 21s. 5d.; working profit from current treatment: 1912, £521,561; 1913, £694,553. Profit from accumulations: 1912, £10,429; 1913, £4,661. Total working profit: 1912, £531,990; 1913, £699,214. The large increases in the tonnages mined and milled were in a measure due to the distinctly improved condition of the Deep shafts and workings, which allowed a considerably increased tonnage to be hoisted from the Deep mine; this was not only sufficient to supply the Deep mill to its full capacity, but in addition 42,631 tons, or an average of 3,553 tons per month, were trammed on surface and crushed at the Outcrop mill. The connection to the Deep workings from the Outcrop No. 1 shaft also allowed ore in the form of stope and former boundary pillars and blocked ground in the two upper levels of the Deep, previously inaccessible, to be mined through this shaft. In addition to the tonnage mined, 78,801 tons of ore were broken and were left in the current stopes of the Deep workings in the form of reef packs as support to the hanging wall, the cost of which has been borne entirely by the current working costs. Since the commencement of reef packing in May, 1911, 146,288 tons have been packed, whilst to date 17,619 tons have been withdrawn from these packs and sent to the mills. The improvement in the condition of the Deep shafts is most marked, due to the effect of the sands filling undertaken in their neighbourhood and the cessation of derailments has permitted not only the extraction of greater quantities of ore, but increased time for maintenance work. Although continuing to cost heavily for maintenance, the shafts no longer give continual anxiety as in the past, and there is now further spare capacity even above that reflected by the increased quantities of ore hoisted through them during the best months of the year. The Nos. 2 and 3 shafts of the Outcrop section have been permanently closed, and all hoisting in this section of the mine is now confined to the No. 1 shaft alone; the rich shaft pillars near the bottom of No. 2 shaft are being extracted, and have accounted, in a measure, for the high values latterly at the Outcrop mill; the transference of ore from the Deep shafts also favourably influenced the recovery at this mill. The present satisfactory condition of the Deep current workings is principally due to the system of reef packing employed. During the year some further sands filling has taken place at the back of the Deep shafts, in the worked out areas of both the Outcrop and Deep sections. No sands filling has, however, been done since December last, and any further filling undertaken in the future need only be on a reduced scale. The improved condition and safety of the stopes has admitted of better efficiency being shown in all classes of work. As anticipated last year, the ordinary development work accomplished showed a decrease due to the completion of connections and drives in the western area, but the crosscut from the 12th level No. 1 shaft to the claims situated south-east of the Grahamstown dyke is well under way, and has advanced 208 feet beyond the South Reef drive. It was hoped to expedite the development of these claims by an arrangement entered into with the Village Deep, Ltd., to advance their drives into the area, but owing to the continued acute shortage of native labour that company has not yet been able to commence the work as agreed. The development position of the mine remains satisfactory, but decreases both in the tonnages and values of the ore reserves must be looked for in the future, as the remaining ground to be developed cannot be opened up as quickly as formerly on account of the shape of the unworked claims, neither, as far as can be seen, will the widths be as great, or the value as high as in the ground already opened up. The satisfactory features of the development have been in the No. 2 shaft area, the continued maintenance of the values and big widths on both reefs in the western area towards the boundaries of the Robinson and Robinson Deep, and in the No. 1 shaft area, the extension eastwards of the payable zone on Leader, as further proved by the rich values being encountered on the 13th level drive west, and in the shaft itself. In the ground east of No. 1 shaft, the Leader continues to give no payable values, but on the South Reef more hopeful values have been exposed throughout this area, and a considerable tonnage with a mine grade of 4·3 dwts. was developed and included, thereby materially lowering the average value of the ore reserves. The ore reserves have been re-calculated at 30th September, 1913, and amount to the following:—

	Deep Section.		Outcrop Section.		Total.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Main Reef	—	—	2,900	5·6	2,900	5·6
Main Reef & Leader	—	—	42,400	7·8	42,400	7·8
Leader	1,063,700	8·9	31,100	7·1	1,094,800	8·8
South Reef	826,200	8·5	8,100	11·3	834,300	8·5
Totals	1,889,900	8·7	84,500	7·8	1,974,400	8·7

The estimated stoping widths on which the reserves of the Deep section are based are 77 inches for Leader and 57 inches for the South Reef, as compared with 72 inches and 54 inches respectively in 1912. In addition to the above reserves, there were 128,669 tons of ore in the reef packs, used to support the hanging wall of the stopes of the Deep section, of which 78,801 tons were packed during 1913. The above reserves are immediately available for stoping, with the exception of 465,400 tons of 8·7 dwts. value, which, although fully developed, consist of shaft and boundary pillars. In addition to the foregoing payable reserves, there are fully developed 50,950 tons of a value in excess of 3 dwts., some of which will probably yield a profit before the end of the life of the mine. There are also considerable quantities of low grade Main Reef in the western area of the Deep mine, which are exposed on the footwall of the Leader stopes, much of which will certainly be mined in the later years of the life of the mine, and will assist materially in keeping down the costs of working by admitting of the crushing plant being kept fully at work when the more valuable ore is becoming exhausted. The ore reserves, including packs, in the Deep section show an increase of 117,269 tons, but the value has decreased by 0·8 dwt. as compared with the previous year, due to the inclusion of the lower grade ore before mentioned and to the increased stoping width. The decreases of 85,100 tons, and of 0·4 dwt. in value of the Outcrop reserves was expected, as that section is fully developed. Reference was made last year to the fact that the Leader reserves of the Deep section were being purposely conserved to permit of the South Reef stopes being advanced in order to relieve the pressure on the treacherous Leader hanging. This policy has been continued, and the South Reef stopes are now, in nearly all cases, so advanced as to allow of the Leader being broken contemporaneously, with the result that, during the latter half of the year, the proportion stoped from the two reefs has been nearer to that in which they appear in the reserves. While the native labour position improved greatly during February, March and April, as compared with the earlier months of the financial year, at no time was the supply fully adequate, and increased tonnage could have been milled had more labour been available. From June onwards the labour supply fell off rapidly, and the ill effects of the shortage were aggravated by the removal of all tropical natives from the mine, and by the suspension of recruiting for a time as a result of the miners' strike in July. It is hoped that owing to the distinctly improved condition of the shafts and workings of the Deep section, and to the lower charge for development redemption estimated to complete the development of the mine, the working costs will be reduced during the current year. The position at date is such that unless the native labour force improves materially in the immediate future the profits for the coming year will show a considerable falling off as compared with those of the past financial year; a year which has been a record one in the history of the company.

The Manager, Mr. F. J. Trump, writes, *inter alia*:—The system of reef packing for the support of the mine has proved successful throughout the year and no extensive falls of ground have taken place. 78,801 tons of reef were packed and 17,619 tons withdrawn from packs during the year. Work in the bends and crushed portion of the incline shafts has been steadily proceeded with, and the shafts are now capable of dealing with a larger quantity of rock than is at present available. All four compartments of both the Deep shafts are now identically equipped as far as man cages, skips, tipping gear, ropes and pulleys are con cerned, with considerable benefit owing to interchangeability. The working costs at 20s. 1d. per ton show a decrease of 1s. 2d. compared with last year. Development operations for the year resulted in 10,394 feet, a decrease of 1,834 feet compared with last year. Shaft sinking accounted for 463 feet against 556 feet. The whole of the shaft sinking was in the Deep shafts, where 14 feet more were accomplished than during the previous year. No shaft sinking was required on the Outcrop section. At No. 1 Deep shaft the 14th east and west levels on the Leader have been started, and shaft sinking temporarily suspended, to allow of the cutting of the 14th station. The No. 2 Deep shaft is now being sunk and has reached the plane of the 12th level. 17,616 tons of sand were lowered into the mine during the first three months of the financial year, principally into partially caved areas in the Ferreira section at the back of the Deep shafts, making a total of 771,604 tons lowered since June, 1910. The steadying of the ground in the neighbourhood of the bends must be to a large extent due to this sands filling. With the exception of one winding engine at No. 1 shaft, the electrification of the plant has been practically completed. On several occasions, owing to breakdowns of the Rand Mines Power Supply Company's plant, the supply of electric power and compressed air has been insufficient, and our own plant has had to be restarted. Amongst the items of extraordinary expenditure which have been charged to working costs during the year are: Contribution to miners' phthisis insurance fund—first complete year; electrification of Ferreira slimes works and extractor house; intermediate electric pumps with motors, cables, etc., for the Deep shafts; completion of conversion of hoisting compartments in both shafts. The pumping system of the Deep mine is in course of reorganisation, and before the end of the year the bulk of the water will be concentrated to a new pumping station on the 12th level, No. 1 shaft, whence it will be pumped to the existing station on the 2nd level, No. 1 shaft, and thence to the surface. This will do away with the pumping stations on the 5th and 8th levels, No. 2 shaft, and the 10th level, No. 1 shaft, and effect considerable economy in pumping charges. With the exception of a couple of severe epidemics of pneumonia, which particularly affected tropical natives, the health of the native employees has been good, the average percentage of natives not working owing to sickness being 1 per cent., accident 0·8 per cent., other causes 0·8 per cent., whilst the percentage working averaged the high figure of 97·4 per cent. The improvement in percentage working of 1·3 per cent. over last year's figures reflects great credit on the mine, medical and compound staffs. The average number of natives in the company's service was 3,630 against 3,704 for the previous year, the monthly figures varying from 3,960 in March to 3,100 in September, a drop of 860 boys. Since the strike the native labour position has been most unsatisfactory, and has seriously affected profits.

THE YEAR WITH THE WITBANK COLLIERY.

Working Profit, £73,323—Increased Output—Points from Reports.

For the twelve months ended August 31st the Witbank Colliery shows a balance brought forward from previous year of £41,139 10s. 6d.; profit realised during the year, £73,323 17s. 8d.; rents, interest and sundry revenue, £1,114 15s. 6d.; nett amount received in connection with the company's mineral rights on Blesboklaagte, £1,016 1s. 7d.; total, £116,594 5s. 3d. From this falls to be deducted audit fees for previous year, £262 10s. 0d.; royalty paid to Government for previous year, £2,769 5s. 10d.; amount written off for capital expenditure, £2,165 8s. 7d.; sundry items, £38 11s. 0d.; dividends Nos. 16 and 17 of 15 per cent. and 10 per cent. declared during the past year, £52,500; directors' extra remuneration, £1,500; total, £59,235 15s. 5d.; leaving a balance to be carried forward of £57,358 9s. 10d. An action was instituted against the owner of the farm Blesboklaagte, to recover the estimated profit on the coal necessarily left under that portion of the farm, under which the company holds mineral rights, and over which the Middelburg Steam Coal and Coke Company, Ltd., had constructed a railway siding, this profit being estimated at about £6,000. Absolution from the instance, upon a preliminary point, was given against your company in the Supreme Court, and the case was eventually settled by payment to the company of the sum of £2,500, against which had to be set the legal costs, amounting to £1,784. A further sum of £300 was obtained from another party in connection with some buildings erected on the same farm. The nett balance of £1,016 1s. 7d. has been taken in on the credit side of the appropriation account. The company has not been able to obtain from the plant the quality and quantity of tar which it was anticipated it should produce, and consequently it has not been possible to carry out the contract entered into with the Johannesburg Municipality. On the 28th February, 1913, the directors declared an interim dividend, No. 16, of three shillings per share (15 per cent.) for the first half-year, and on the 31st August, 1913, an interim dividend, No. 17, of two shillings per share (10 per cent.) for the second half-year, making 25 per cent. for the year.

MANAGER'S REPORT.

In his report, Mr. J. K. Addie, the manager, states, *inter alia* "The total output from the Witbank and Uitspan mines amounted to 756,631½ tons, which shows an increase of 10,008 tons as compared to 1912. At Witbank, the machinery and plant has been well maintained and is working satisfactorily. Several necessary additions have been made to ensure the smooth running of the gear. The above output has been hauled through the incline shaft, the vertical shaft being available to augment the output if necessary. All haulages have been kept in good order and extended as the development drives advanced. The underground transformer station and main cable have been moved further into the mine to supply power for haulages, etc. Special attention has been paid to development, and good work has been done. Extensive areas have been proved, which should more than amply meet all contingencies. The quality and thickness throughout the mine, generally speaking, continues to be satisfactory. No faulting of any consequence has been met with. The deposit continues to be of a gently undulating nature. In the vicinity of the most southerly development drive a circular air shaft is being sunk, and, when completed, efficient ventilation will be provided for some considerable time. Experiments have been carried out with an improved type of coal cutter; the results obtained have been satisfactory and justified the introduction of some of these machines. No additional buildings have been erected, and all existing buildings have been well maintained. The health of the native employees is satisfactory. Considerable improvement shave been carried out to one of the compounds by the addition of impervious tiled floors, etc. At Uitspan, no additions have been made to the existing plant, which has run satisfactorily during the year. Development has been carried out chiefly to the north, south-east and south-west of the main shaft. The development done can provide working faces to double, if necessary, the present output. The seam continues to show values equal to any in the district, and the thickness of the deposit is most satisfactory. The endless rope haulages have been maintained in good working order. The pumps are capable of handling all water in the mine, and provision has been made to meet any increase. The general prospects of the mine are excellent. All existing buildings are in good repair."

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THE MESSINA COPPER COMPANY.

A Full and Authoritative Account of an Interesting and Important Enterprise—The Transvaal's Most Northern Mine.

VI.—RAILWAY MATTERS—THE COMPANY'S COAL PROPOSITION—IN CONCLUSION.

In order to complete this series of articles on the Messina Copper Mine there now only remains to be considered the question of railway connection with Pietersburg and with the other industrial centres and parts of South Africa. Some little discussion of this important aspect of the Messina Company's affairs, together with a reference to the coal mine at Lilliput, and a few further remarks as to the company's finances and outlook will suffice to bring the series to a conclusion.

The Zoutpansberg's Great Need.

For some years previous to the actual commencement of railway construction in the Zoutpansberg in 1911, the question of providing economical and efficient means of transport for the exploitation of this, the most northerly portion of the Transvaal, had been under consideration. The first discoveries of Transvaal gold were made in the Zoutpansberg division, and 20 years or so ago there were a large number of active gold mines along the Murchison Range and in the Klein Letaba district. The majority of these have since been closed down, but there can be no doubt that if worked on more businesslike lines than have hitherto prevailed and with railway communication instead of the slow and costly transport methods of the past—donkey and ox-wagons—number of these mines would be worked at a profit. In addition to Messina there are other extensive cupriferous deposits in various parts of the Northern Transvaal—notably at Motala, M'Tamba, Palabora and the Malgo Syndicate's ground. There are, moreover, micaceous beds of considerable promise and coal measures, so that it will readily be conceived that quite apart from Messina there was ample justification for the construction of railways to develop the mineral zones of the district. But in addition to its mineral wealth the Zoutpansberg is possessed of very considerable agricultural possibilities.

Sir T. R. Price's Report.

Reference may for the moment be made to a Government Blue Book, dated 1909, dealing with railway construction projects in the Zoutpansberg. In this document the building of railways both from Pietersburg northwards and along the old route of the Selati Railway is discussed at length. It will be interesting to recall the views of Sir T. R. Price at that time General Manager, and which are embodied in a memorandum for the Railway Board. "A recent tour of inspection of the district from Pietersburg via Bandolier Kop, Fort Edward, and Louis Trichardt across the Zoutpansberg Range to about 12 miles north of Louis Trichardt, and the development observed, as well as the reliable information afforded, made it clear that railway extension is not only warranted, but urgently needed. The consensus of testimony was to the effect that:—Taking the present main road from Pietersburg to Louis Trichardt as a rough dividing line, the country to the west thereof was much less fertile, less occupied, and less developed than the country to the east of the road. The very large native population available for service on the Witwatersrand mines and for other labour purposes live east and north-east of Bandolier Kop—not only to the Transvaal border, but beyond to Portuguese East Africa and to Rhodesia. These natives rank as among the very best class of workers on the gold mines; their route of travel is via Fort Edward and Bandolier Kop to Pietersburg and thence by rail. With the extension of the railway they would join the trains at or about Bandolier Kop, and it is stated with confidence that the extension of the railway to or near Bandolier Kop will result in a substantial increase in the labour supply from the district to the mines and for other industrial and agricultural purposes. The mineral wealth of the district is also east of the road both north and south of the Zoutpansberg Range so far as at present ascertained. The Messina Copper Mine seems to be approximately the eastern limit of the mineral area of the district, with the exception of the large salt pan in the vicinity of the Blaauwberg. The copper concentrates received at Pietersburg from the Messina mines for despatch oversea amounted during the six months ended 31st December, 1908, to 659 tons, or an average of 110 tons per month. It should be stated that the district north and south of the range does not seem to have been by any means thoroughly prospected or examined to ascertain the mineral resources thereof. The eastern district consists of, roughly speaking, a high-level and low-level plateau, the descent from one to the other being so precipitous as to render railway communication between the two well-nigh impossible, except at an initial expenditure and a subsequent cost in working that the circumstances do not warrant. It seems clear that if this low-level plateau requires to be served by railway communication, such communication should be afforded by way of the Selati Line. I have not been over this area yet, and cannot offer any recommendation based on personal observation and enquiry as to what should be done. I hope to visit the district about August next. With regard to the high-level plateau, the desire of the district is for a railway almost due north from Pietersburg to the Limpopo, at or near Messina via Bandolier Kop and a little east of Louis Trichardt, and a second line from Pietersburg running about east-north-east to near the boundary of the plateau." After considerable debate and negotiating an agreement between the Company and the Transvaal Government providing for extension of the railway northwards from Bandolier Kop on to the Limpopo was signed. The actual work of linking up the mine with the South African Railway system was commenced in 1911.

The Present Position.

It was announced last year that it was expected to reach the mine before the present date, but there have been delays at times for construction material, and the past season was exceptionally severe as regards malaria fever, yet it must not be overlooked that the railway engineers have done splendid work and the construction of the line through Zand River Poort, that is following along the bed of a stream through the heart of a great mountain range where even a footpath did not previously exist, for a distance of 8½ miles, has been an undertaking of considerable magnitude. At the beginning of March, the line was opened for traffic at Louis Trichardt about 60 miles from Messina, and at the end of July construction trains were running to and from Lilliput, about 20 miles from the mine, and since then have been handling the traffic to and from this point. At the moment of writing the line may be said to have practically reached the mine. At the mine, railway station, yards and sidings have been laid out convenient to the works. The question of continuation of the line to the Rhodesian border is understood to be under consideration by the Railway Administration, and there is good prospect of the line being used for the transport of goods to and from Southern Rhodesia. The company's nearest neighbours, Messrs. Liebig, with their great estates across the Limpopo River, are already transporting material via Messina, and in the near future granted transport facilities by good roads or the ultimate linking up of the line with the Rhodesian Railway system, the traffic over the Messina railway will be quite an important item in addition to the copper company's. The Messina Company, it may be remarked, has an arrangement in respect of the Bandolier Kop-Messina line, whereby it guarantees for 10 years, reckoned from the date on which the whole of the new line is open for traffic, any loss in working not to exceed 4½ per cent. on cost of construction up to £792,000, including cost of the Tzaneen connection.

The Tzaneen-Selati Line.

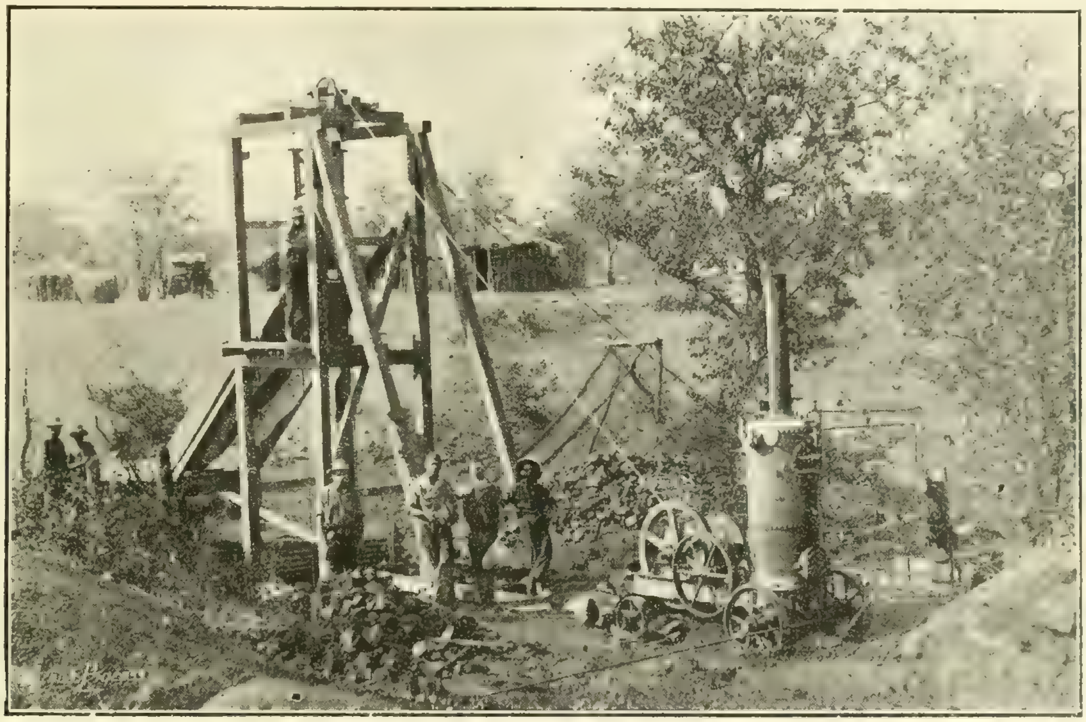
Of almost equal importance to the company is the extension of the Tzaneen-Selati railway, the line that will give to the company direct access to Delagoa Bay. This line will in the near future be connected up with the Pietersburg-Limpopo railway at a point situated between Munnik and Bandolier Kop stations. The completion of the Tzaneen-Selati section makes a direct route from Messina to Delagoa Bay of 431 miles, as against the present route via Pietersburg-Pretoria, of 697 miles.

The Lilliput Coal Mine.

To a base metal mine where smelting operations are in progress, the proximity of coal beds is a matter of the greatest importance, and in this respect the Messina Company are fortunate in possessing a coal mine close to Lilliput Station. The Lilliput, or Blaauwkop, coal mine is situated about 25 miles from the Messina mine and within a quarter of a mile of the railway. The colliery is as yet entirely in the embryonic stage. The coal is of fair quality, although it can hardly be described as first grade, and it is probable that in the course of time an extensive coal-bearing area will be exploited in the vicinity of the Zand River. At present an output of several hundred tons per month is being secured from the colliery, the produce being used largely for smelting purposes. As the railway is now laid on to the mine, however, a larger output will be called for, it being intended to employ the coal from Lilliput for steaming as well as smelting purposes. Work on these coal claims was only resumed at the end of July last, operations having been suspended for some time on account of labour and transport considerations. Mr. Calderwood in his consulting engineer's report for the past year, reports the coal to be "improving in quality under better cover" and refers to the fact that as the line passes close to the workings a short siding can be put in when required for convenience in loading coal on trucks direct from the mine.

A Prospect of the Future.

These coal fields are, perhaps, destined to play a more important part in the future than merely to supply the existing Messina mine with fuel. Should developments in the extreme Northern Transvaal warrant such an enterprise it is quite on the cards that in the not far distant future there will be installed on the coal field a power station, where electrical energy will be generated and transmitted to the larger Messina, to Vogelsang, to a Liebig's meat factory, and to half-a-dozen other enterprises which in the fulness of time are likely to blossom into a prosperous existence in the country north of the Zoutpansberg Range.



Messina: Blaauwkop Coal Mine.

Finances.

In conculsion, a few remarks appear to be called for regarding the financial aspect of the company. The authorised capital of the company is £250,000, there being 1,000,000 shares of 5s. each nominal value. Of these 661,804 shares are in issue, so that the issued capital of the Messina Company stands at the low sum of £165,451—decidedly a remarkable figure when one considers the present extensive workings and equipment and the tremendous transport difficulties the company has had to face. Option certificates have been issued or are issuable entitling the holders to subscribe for the 338,196 unissued. There is 6 per cent. debenture stock amounting to £250,000. The property of the company consists of freehold and leasehold farms representing a total of 22,432 acres standing in the company's books at a cost of £141,671. Prospecting figures in the books at £20,597, mine development and shafts at £94,774, and buildings, machinery, plant, live stock, tools, etc., at £83,038. The profit and loss account for the year ended 30th June, 1913, shows a balance carried to the balance sheet of £12,358.

A Fine Record.

In bringing these articles to a conclusion, we cannot do better than quote from the speech of Mr. A. M. Grenfell, delivered at the annual meeting held in London a week or two ago. Dealing with the financial position, the chairman said: "There is nothing of particular interest in the balance sheet, except the extraordinary low capitalisation—that is, £250,000 of Debenture stock and a share capital of £165,000, but during these eight years every sixpence taken out of the mine has been put back in development, and we have realised up to date £375,000 for the copper already produced. The Debenture stock remains at £250,000; in fact, it cannot be increased beyond this figure. The interest during the past year has been earned twice over, and the estimates of earnings show that in future the interest should be covered nearly fifteen times over, so that the Debenture stock holders should feel more than satisfied with their position. We have sundry creditors £27,000, of which £21,000 is the usual running accounts in South Africa. We have brought in £12,000, being the balance of profit after paying Debenture interest, and have added to this the amount standing to share premium account of £16,000, bringing up the account to £29,000, and have utilised this in wiping off the deficit accumulated during the past years, so that we started the new year in July with an absolutely clean sheet. As regards the balance sheet, on the credit side you will notice our properties stand at only £141,000, prospecting £20,000, and development £94,000 a total of £255,000 - whereas the ore reserves, as I will explain to you later, at a little below to-day's price of copper, show a valuation of nearly £1,150,000—and this is from the Messina mine alone, without estimating anything at the Harper mines and the two other deposits on Vogelsang, which give promise of opening mines as large and valuable as Messina. Ore in transit was valued at £43,000, and cash at bankers, in hand and on deposit is £24,000, making the available resources £67,000, after paying for the whole cost of the installation of the big concentrating mill and two reverberatory furnaces, except an item of £6,500 due for machinery still to be delivered. The balance sheet, therefore, shows a strong and healthy position. The profit and loss account is even more satisfactory, as we have received £94,000 from ore realisation, this being largely from ore taken out during development work, our energies having been strictly confined to developing the mine for the large production necessitated by our new mill, and the manager's energies having been devoted to the erection of the new mill and all its appurtenances. After paying for all expenses we had a profit of £29,000, of which £15,000 was required for Debenture interest, and the balance has been used as already explained."

FINIS.

These descriptions of the Messina property and analyses of the company's positions, technical and financial, are now finished. As the writer inscribes these last few lines he is advised that the railway line has actually reached the mine. This achievement marks the consummation of plans which have been the especial concern of the Messina Company for eight years past. It is nearly twelve years since Messrs. J. P. and A. M. Grenfell visited the Messina district for the first time. Presiding at the annual meeting, the latter said he then felt sure that they had discovered something quite exceptional and in spite of disadvantages they would win out, but he never thought it would take twelve years' hard work before it could be demonstrated beyond all possible doubt that a copper field of great value existed in the Transvaal. For eight years the Messina Company has existed. These eight years have represented heavy pick and shovel work for all connected with the company. It has been a hard up-hill toil, but now that the top of the crest has been reached the prospect is all the more alluring. The Messina Company stands to-day triumphant after twelve years' work on the top of a steep hill, and the company is surely entitled to look back into the deep valleys of difficulties that have been successfully traversed and smile the smile of the conqueror who muses on his battles. Ahead there is another climb but not nearly such a steep one as that already achieved; and that it will be accomplished no one can doubt. The eminence of this new ascent is crowned with works mightier—much mightier—than those at present installed. One sees long trains leaving those works with trucks stacked high with metallic copper. One can visualise a busy town and a large and flourishing population; one sees other mines, other industries, arising out of the country that but a few years ago was as unknown, as untraversed, as the heart of the Sahara. The Messina Company has at last entered the profit-earning stage, its plans have matured, and its outlook for the future is full of a brilliance in which the whole of the country south of the Limpopo River will have its fair share and portion.

MINING MEN AND MATTERS.

The death of Mr. Robert M. Mein, son of the late Captain Mein, at Oakland, California, on the 26th ult. is announced.

* * * *

The many friends of Mr. C. F. Goulding, of African Farms, Ltd., will be glad to know that he is progressing satisfactorily after a prolonged illness.

* * * *

The party of officials of De Beers Consolidated Mines, Ltd., arrive at Johannesburg this week-end, and their arrangements are in the hands of Professor Yates.

* * * *

Colonel Gorgas, the Panama health expert, accompanied by Dr. S. F. Darling, Chief of Laboratories at Panama, and Major R. F. Noble, General Inspector of the Department of Sanitation at Panama, arrived in town by this week's mail-boat express. The members of the party looked in excellent health, despite their trying journey of thirty-five hours, and were warmly welcomed at the station by Mr. John Munro, President, and Mr. Lewis Kelsey, legal adviser and secretary of the Chamber of Mines, Dr. G. A. Turner, Medical Officer of Health to the W.N.L.A., Mr. Samuel Evans, Messrs. Charles D. Henderson, Acting American Consul, W. L. Honnold and Edward L. Bateman.

* * * *

The following is a list of passed and referred students in the Diploma Examination (1913) of the S.A. School of Mines (names in alphabetical order):—First year: H. J. Arndt, A. E. Blair, J. Cellier, J. K. Exter, W. R. Greathead, T. H. S. Hacker, B. M. Harris, J. R. Kennedy, S. Lange, F. L. Melville, E. R. Roberts, V. Rose, B. Sampson, M. J. D. Steyn. Second year: Mining—E. W. Harris (referred in Pure and Applied Mathematics), J. W. Lawrie, T. O. Leslie, E. Samuels (referred in Theory of Physics), J. A. van Niekerk. Engineering—E. C. Andrews, E. B. Bell, C. J. Dekema (referred in Applied Mathematics), W. D. Galpin, J. P. Leslie M. Leviseur, R. L. W. McNally (referred in Applied Mathematics and Physics), G. Parry, J. Russell (referred in Applied Mathematics), J. S. W. Ward, W. T. Williams (referred in Applied Mathematics). Third year: Mining and Metallurgy—A. Block (referred in Theory of Surveying), C. R. Bowker, J. J. Campbell, P. B. Ellis, P. Friedman (referred in Theory of Surveying), A. S. Hersovitz, J. le Vieux, M. W. Meskin (referred in Theory of Surveying), T. C. A. Meyer, J. R. McClure, H. Pirow, C. A. Pratt, L. Schur, M. Weinbren. Mechanical and Electrical Engineering—J. Brown, W. E. Geerling, W. C. Lindemann, E. P. Reim, A. Taylor-Smith. Civil Engineering—H. L. Abrahams, R. Jochelson, N. Landau (referred in Civil Engineering); A. Lipman, L. Miasnik (referred in Building Construction Drawing), H. S. Phillips, J. H. van Belkum. Final: Mining—A. S. Davis, M. W. Duirs, J. Grusd, H. Hammar, L. D. Hingle, V. G. Holgate, A. Hosiosky, H. Kahn, G. H. Little, F. D. Long, A. C. Lurie, J. D. Mackenzie, F. A. Reim, H. van der Merwe, S. van der Merwe, F. B. Wade. Mechanical and Electrical Engineering—L. Beerstecher, S. Bloch, E. L. Damant, H. J. Issels, A. E. Jensen, H. O. Smith. Civil Engineering—C. J. Chaplin, C. O. Ehrlich, D. Getz, V. A. Ryder, A. C. Thornton.

Crown Diamonds.

The following was the result of operations at the Crown Diamond mine for the month of November, 1913:—17,674 loads washed, yielding 1,721¼ carats.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Dust Question.

To the Editor, *South African Mining Journal.*

Sir,—In my letter last week re the above, I omitted two words in one of the concluding paragraphs, which leaves the meaning very vague. The said paragraph ought to have read: "As the Mines Department is satisfied that the dust danger *in stopes* has practically been reduced to vanishing point we need not give much thought to this class of working place." Hoping you will make this correction for me.—Yours, etc.,

W. LACEY.

West Rand,
3rd December, 1913.

New Regulations and the Coal Mines.

To the Editor, *South African Mining Journal.*

Sir,—In your last issue "Shift Boss" points out an apparent discrepancy between Reg. 100 (9b) and Reg. 106 (14), and places them side by side for comparison. He adds: "Comment is needless." Allow me to "comment." Reg. 100 (9b) applies to "any mine other than a fiery mine," and requires non-fiery mines to "again blast" misfired holes. Where tamping can be easily and safely withdrawn this is practicable, and is apparently found to be the safest procedure in Rand Gold mining practice. In fiery mines using "permitted" explosives much slower in action than blasting gelatine, it is necessary and is required by law to use clay tamping, which cannot be safely withdrawn for re-blasting. It is therefore necessary to specify under Reg. 106 (14) "that every drill hole shall be bored not nearer to a socket of a hole, or a misfire, than 12 inches." Metalliferous mines being covered by Reg. 100 (9b), the words "or a misfire" are redundant for them, but they still apply, and are necessary for fiery mines. The two regulations illustrate the confusion that arises from having coal and metalliferous mines under the same regulations. Both coal and metalliferous mining men have to wade through long pages of regulations which do not apply to them. In view of the inordinate length and over-elaboration of regulations, it is very necessary that abstracts should be prepared giving regulations which apply to each class of workmen, that such abstracts should be either prepared or endorsed by the Mines Department, and that no workman or official should be prosecuted for any offence which is not specified in the particular abstract which applies to his vocation.—I am, etc.,

WM. TAYLOR HESLOP.

St. George's Colliery,
Hatting Spruit, Natal,
December 1st, 1913.

Discoloration and Greasy Scum on Copper Plates.

To the Editor, *South African Mining Journal.*

Sir,—I find a simple and effective method for dressing copper plates is to discard brushes and rub the plates lightly with chamois leather or Hessian sacking, which removes the greasy scum and leaves the plates bright and in good condition to save gold. Brushes apparently mix the scum with the amalgam, without cleaning it from the plates, with the result that when the battery is re-started and the pulp flows over the plates, the amalgam surface is levelled down and the scum speedily reforms on the surface. By rubbing the plates with chamois or Hessian the scum adheres to the material and can be washed out and small particles of amalgam saved. Owing to the above method my plates are in excellent order and I am treating three-dwt. ore.—Yours, etc.,

R. DIESPECKER.

P.O. Ross Hill, Transvaal,
27th November, 1913.

ANSWERS TO CORRESPONDENTS.

H. E. E.—We cannot recommend you to buy the syndicate shares in question.

A. W.—You should hold until the market improves.

"Anxious."—The first results of washing should shortly be announced, and may enable you to estimate the value of the property.

Consolidated Main Reef.

During the quarter ended September 30 the Consolidated Main Reef made a profit of £27,859 4s. 8d., equal to 8s. 11·934d. per ton milled. There was expended on capital account an amount of £23,053 4s. 8d. On development there was accomplished a total of 4,364 feet. Excluding main crosscuts, ore passes and prospecting work, etc., 3,300½ feet or 86·4 per cent. has been on reef. Of this 2,023½ feet or 61·3 per cent. has been payable of an average of 9·2 dwts. over 48 inches, and 1 277 feet or 38·7 per cent. has been unpayable of an average value of 3·4 dwts. over 48 inches. Of this payable portion 1,719½ feet or 85 per cent. has been on Main Reef Leader, of an average value of 9·8 dwts. over 48 inches, and 304 feet or 15 per cent. has been on South Reef, of an average value of 6·0 dwts. over 48 inches. The ore reserves at September 30 stood at 614,780 tons. 35 feet have been sunk and timbered in No. 3 shaft, making a total depth to date of 2,800 feet.

Modderfontein B.

The profit earned by the Modderfontein B. Gold Mines during the quarter ended September 30 was £127,081. The reef disclosures were as follows:—Main Reef: Distance exposed, 2,061 feet; width, 13 inches; assay value, 150s. 8d. Throughout the period the mine has suffered very considerably from a shortage of native labour. Of its complement of 2,773 natives, only 1,940 were in the company's service at September 30, 1913. The reduction in development footage and tonnage milled is due to this scarcity, but as a portion of the ore required for milling can be obtained from the surface dump by a lesser number of natives than is required to produce a similar quantity from underground, it was decided to use the surface stope rock, which is of good value, for this purpose; during the last week of September 1,153 tons were taken from this reserve. It is expected that the sinking of the incline shaft will shortly be restarted and that development operations will now proceed more normally. The value of the ore milled was 5s. 5d. per ton higher than the previous quarter. This increase more than counteracted the decrease in the tonnage milled and the slight increase in working costs. A sum of £7,531 was spent on account of capital expenditure, and it is estimated that a further amount of £44,685 will be required to complete work at present authorised by the Board.

Got a Certificate?

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine-Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible. E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Pritchard Street, Box 2061.

Rhodesian Section.

LATEST MINING NEWS.

The October Output—Globe and Phoenix Dividend—Transvaal and Rhodesian Estates—Bushman Copper—The Van Tonder Mine.

The total value of Southern Rhodesia's mineral output for the month of October has been officially declared at £274,209, an increase of £10,704 as compared with the month of September. The figures for the two months read as follows:—

	September.	October.
Gold	£250,429	£247,068
Silver	1,219	1,138
Lead	392	422
Chrome Iron	3,383	19,475
Coal (Sales)	5,796	5,931
Asbestos	1,759	—
Diamonds	527	175
Total ...	£263,505	£274,209

The decrease in the gold of 800·80 ozs., valued at £3,361, was, it will be seen, more than counterbalanced by the augmented shipments of chrome iron ore, which accounts for the gross increase of £10,704 shown in the total. In the Bulawayo district a drop of 145 ozs. in the output of gold is accounted for principally by a substantial decline in the output of the Criterion mine.

* * * *

The Gwelo district records an increase of 27 ozs. The decrease in the Hartley district total, amounting as it does to 1,217 ozs. in weight and £5,118 in value, is mainly to be attributed to shortage of water and consequent reduced running time on a great many of the smaller properties. The Eldorado yield is maintained. In this district good progress is being made at the Golden Kopje with the construction of the plant, which has now been removed from the Ayrshire mine, and in a few months' time this may also be expected to enter the producing list. In the Mazoe district, an increase of 397 ozs. is shown, while there are a few new small producers in the locality. The districts of Salisbury, Umtali and Victoria present no special features of interest. A table showing the value of the monthly and annual gold outputs since January, 1911, together with the value of the other minerals recovered, is appended:—

	1911.	1912.	1913.
January	£207,904	£214,918	£220,776
February	203,056	209,744	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211,413	234,408	243,452
June	215,347	226,867	240,303
July	237,517	240,514	249,302
August	243,712	239,077	250,576
September ...	225,777	230,573	250,429
October	218,862	230,072	247,068
November ...	214,040	225,957	
December ...	217,026	218,661	
Total Gold ...	£2,641,897	£2,707,369	£2,409,545
Other Minerals...	242,863	257,230	207,313
Total Value ...	£2,890,759	£2,964,599	£2,618,858

* * * *

After a long discussion at the adjourned meeting of the Globe and Phoenix Gold Mining Company, an agreement was unanimously arrived at with regard to the directors' fees. Earl Russell (the chairman) mentioned that it was proposed considerably to reduce the next interim dividend in order to provide for the heavy capital expenditure. He subsequently remarked that it did not therefore follow that the dividend for the whole year would be any smaller, and also stated that after this year there was no reason to anticipate any heavy capital outlay.

* * * *

The Transvaal and Rhodesian Estates report for the month of September:—Fred Mine: Main shaft sunk 29 ft., total 425 ft. Dyke matter has been encountered.—Office note: As the result of communications with the consulting engineer consequent on encountering dyke formation, the company has been informed that the present main shaft has been sunk in schist to a depth of 370 ft. At this depth dyke formation was encountered. The sinking of the shaft was continued and at a depth of 420 ft. it passed through the dyke formation and again entered into schist, in which it continues. The main shaft has now reached a depth of 433 ft. Two winzes—numbered respectively 16 and 17 and being 150 ft. apart—have been sunk from the 350 ft. level. The reef at the bottom of both these winzes is looking well. Assays show that winze No. 16 for a depth of 35 ft. gives a value of 1 oz. 10 dwts. over a width of 39 ins.

* * * *

The following summary of a report by Messrs. Hooper, Speak & Co. on the Bushman copper mine has been issued by the directors of that concern:—The main conclusions that we have arrived at, as a result of our brief visit to your property, and which we have given in more detail in our report herewith, dated 11th September, 1913, may be summarised as follows:—(1) We found no reason to doubt the latest official estimate that there are 30,000 tons of 8 per cent. copper ore now developed. (2) We consider that this is not a very satisfactory result for the amount of development work which has been accomplished (about 10,000 feet). (3) We found no evidence to cause us to expect that further development work would achieve better results in the future. (4) Accordingly we advise the company to proceed to turn the ore already developed to profitable account. (5) We consider that the most profitable way of treating the ore will be by the Siemens-Halske electrolytical process, and that a plant for this purpose will cost about £20,000 to erect, and with copper selling in London at the average price of £65 per ton the outlay on the treatment plant will be redeemed and a gross profit of about £20,000 realised within four years' time. The copper produced will be of great purity and will sell at a higher price than standard copper. (6) After the end of four years the plant should be able to earn small profits by working out patches of lower-grade ore that exist, but have not been included in the present estimates of ore reserves, and also by following some of the better ore down below the present bottom-level. (7) We consider it possible that during the period of working out the mine some new discoveries of ore may be made, also that the general working conditions may have so improved as to put quite a different aspect on affairs. Therefore, the policy we recommend of extracting the present available ore does not necessarily signify the end of things, for it furnishes the opportunity to learn more than is at present known about the nature of the ore deposit without any cost.

* * * *

The lengthy negotiations with the Goldfields respecting the Von Tonder mine, Enkeldoorn, have apparently fallen through, says a correspondent of the *Rhodesian Mining Review*, as the parties interested have started working the property themselves, arrangements having been made to run a Tremain mill. The proximity of the Umniati river to the mine will benefit the owners considerably.

RHODESIA'S MINERAL OUTPUT.

Detailed "Small Mine" Returns for October—A Decreased Gold Return.

The following is the official return, as supplied by the Rhodesia Chamber of Mines (incorporated) of the mineral output for the month of October, 1913:—

MATABELELAND.

Bulawayo District—

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Abercorn 1. (W. J. Lane)	2	150	72·94	306
Do. (sands)	—	153	40·29	169
Agincourt (H. L. Maidwell)	5	268	230·76	969
Anchor (M. Morrison) sands	- -	360	56·95	239
Atlas (Est. R. Barkley, deceased)	10	920	206·87	869
Do. (sands)	—	680	47·93	201
Belmont (A. D. Hall)	5	232	44·77	188
Do. (sands)	—	200	16·69	70
Big Ben (W. E. Hunt)	4	192	93·79	394
Do. (sands)	—	132	56·83	239
Bilhah (P. I. Weale) sands	—	126	4·86	20
Blanket (Forbes Rhod. Synd., Ltd.)	15	150	36·23	152
Blue (J. Eisenhammer)	2	60	20·51	86
Bobs (Bobs Reef Syndicate)	5	220	21·62	91
Burton (S. H. Burns) sands	—	900	49·19	207
Bushtick Mines, Ltd.	24 2T	5,711	278·34	1,169
Do. (sands)	—	3,117	734·36	3,084
Do. (slimes)	—	2,995	243·10	1,021
"C" (D. & C. Syndicate)	10 1C	1,529	67·89	285
Do. (sands)	—	1,259	64·59	271
Do. (slimes)	—	270	145·79	612
Calli (Triggs & Huntley)	(5)	155	42·68	179
Carry (S. & G. Syndicate)	1 H	48	62·78	264
Do. (sands)	—	192	131·54	552
Champion H. (R. Aserman)	5	440	76·76	322
Do. (sands)	—	255	38·88	163
Claremont (B. L. Whyte)	10	900	99·60	418
Clean Up (H. W. Bearcroft)	5	250	119·35	505
Colleen Bawn (Colleen Bawn Syndicate, Ltd.)	6 1P	480	47·09	198
Do. (sands)	—	250	33·15	139
Do. (slimes)	—	303	68·15	286
Cottage (Cranleigh Syndicate)	2	104	32·86	138
Do. (sands)	—	110	20·40	86
Critterion Gold Mines, Ltd.	10	1,276	615·41	2,585
Do. (sands)	—	720	135·56	569
Dam (W. H. Robinson)	2	80	19·36	81
Do. (sands)	- -	200	12·64	53
Eagle A. (Macdonald & Co.)	5	532	149·64	628
Elumba A. (Cooper & Bosomworth)	5	400	134·69	566
Do. (sands)	—	300	59·84	251
Farvic (H. S. Henderson)	5	538	186·32	783
Do. (sands)	—	300	17·38	73
Flora (E. E. Beecroft)	5	437	110·10	462
Fred (Transvaal & Rhod. Est., Ltd)	5	603	680·15	2,857
Do. (sands)	—	900	153·71	646
Godwin B. (Barrett & Stacey)	5	108	36·45	153
Golden Butterfly (Wheeler, Davis & Rintoul)	5	536	195·39	821
Imani (E. Rochfort)	2	199	104·72	440
Intabanenda (Est. B. Smallie, decd.)	5	250	87·94	369
Do. (sands)	—	164	14·60	61
I.X.L. (G. Jose) sands	—	425	22·68	95
Jumpers (J. P. McCay)	5	200	162·40	682
Do. (sands)	—	120	50·45	212
Kameel (New Rhod. M., Ltd., and A. M. Rhodes)	5	562	196·11	824
L. (J. A. Warwick)	5	340	79·06	332
Li Hang Chang (G. Leach)	3	21	5·53	23
Limes (D. Vincent)	5	250	21·34	90
Little Beauty (T. A. Matthews)	3	15	21·05	88
Lone Hand (Armstrong, Furber & Alexander)	5	88	37·49	157
Do. (sands)	—	340	85·75	360
Lonely Reef G.M. Co., Ltd.	20 3T	5,840	1.597·74	6.711
Do. (slimes)	—	5,840	3,923·17	16.477
Manxman (Manx Syndicate)	4	150	96·34	405
Matabele Queen's Co., Ltd.	10	1,910	431·62	1.813
Do. (sands)	-	1.910	551·68	2.317
Do. (slimes)	—	366	30·56	128
Namaqua (T. W. Angus)	2	250	34·98	147
Nelly (F. D. Roscoe)	3H	927	430·90	1,810
Do. (sands)	—	420	62·56	263
New Eclipse (J. R. Stewart)	5	500	80·03	336
New Jess 1 (R. McConville) clean up	- -	—	57·27	241
Old Nic (Chart. & Gen. E. & F. Co., Ltd.)	15 4P	1,885	667·80	2,805
Do. (sands)	—	1,058	179·45	754
Peach A. (C. Salomon)	5	210	573·56	2,409
Penzance (Penzance Trib. Synd.)	2	140	34·65	146
Do. (sands)	—	225	32·91	138
Planet (Huntley & Triggs)	5	458	186·84	785
Princess (C. A. Abbott)	2	54	10·62	45
Rainbow D.B.S. (Nairn & Crewe)			6·26	26
Do. (sands)	—	—	1·45	6
Riverside (R. Martindale)	2	70	24·03	101
Do. (sands)	—	120	17·33	73
Roan (J. Robinson)	2	180	29·02	122
Rose 2W. (W. A. Carter) sands	—	500	32·45	135
Rous 1 (A. G. Hadingham)	2	48	38·22	160
Rubble (J. Gilpin)	5	400	52·57	221
Selborne (Selborne Syndicate)	3	258	116·78	490
Sport (J. R. Stewart)	(5)	90	40·01	168
Star (Romola Nigel G.M. Co., Ltd.)	5	283	207·25	870
Susanna Mines, Ltd.	8	948	294·19	1,236
Do. (sands)	·	689	38·57	162
Do. (slimes)	—	222	20·47	86
Teutonic (Macdonald & Bonshor)	5	598	167·69	704
Do. (sands)	—	550	58·09	244
Tuff Nut (King's Syndicate)	5	210	45·98	193
Do. (sands)	—	290	56·09	236
Winifred (Rhod. M. M. Exchange)	1 I.R.	105	110·92	466
Xanthic (W. J. Lane)	(2)	40	10·47	44
Bulawayo district total			17,053·82	71,626

Gwelo District—

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Alderman (Williams & Woodger)	3	210	46·64	196
Ardpatrick (C. Maleham)	3	344	136·26	572
Bedad (A. & B. Syndicate)	5	400	93·61	393
Bee (Scott, Hodgson & Nalty)	2	433	109·76	461
Cactus (Renton & Gray)	5	300	97·28	409
Do. (sands)	—	250	39·12	164
Collingwood (Pini & Wearing)	Ball mill	3	59·21	249
Do. (sands)	—	1,205	127·02	533
Csardas (Wolfshall Syndicate)	10	600	572·08	2,403
Do. (sands)	—	487	102·31	430
Do. (slimes)	—	113	11·75	49
Eileen (M. L. Price)	5	575	68·71	289
Elysion (Holmes & Urquhart)	5	471	50·90	214
Gaika G.M. Co., Ltd.	5 1C	3,065	1,310·58	5,504
Do. (sands)	—	1.522	70·03	294
Do. (slimes)	—	1,608	107·43	451
Globe and Phoenix G.M. Co., Ltd.	40 10P	6,677	6,952·41	29,200
Do. (reserve declared)	—	—	2,563·06	10,765
Do. (concentrates)	—	290	448·92	1,885
Do. (slimes)	—	2,467	551·88	2,318
Gothic (Mashonaland Agency, Ltd.)	15 2P	1,022	411·61	1,729
Invulnerable (A. E. West)	5	98	18·29	77
Do. (other sources)	—	—	2·42	10
Mask (B. Frau)	1D	19	43·69	183
Moonie River (Yellow Jacket Synd)	5	392	101·00	424
Moss (James & Morrisby)	2	263	115·87	487
Do. (sands)	—	480	36·42	153
New Dunraven G.M., Ltd.	5	850	110·70	465
Do. (sands)	—	800	41·94	176
New Moss (Robinson & Bennett)	2	218	43·80	184
North Bonsor (Cornish Syndicate)	20	2,639	304·69	1,280
Do. (sands)	—	1,610	148·75	625
Palm (A. Malcolm)	- -	—	5·94	25
Paradox (Bolt & Franks)	5	360	164·21	690
Pompei (F. Brorson)	2	110	44·49	187
Red Hill Dev. Syndicate, Ltd.	1C	1,126	43·24	182
Do. (sands)	—	583	26·61	112
Selukwe Columbia G.M., Ltd., partial clean up	- -		317·28	1,333
Do. (concentrates)	—	1.400	301·53	1.263
Do. (sands)	—	249	101·05	423
Do. (slimes)	—	157	36·41	153
Shamrock (Crampin & Masters)	10	1,457	97·72	410
Do. (sands)	—	375	14·91	63
Snowed Up 1 S.E. (James and Morrisby)	5	160	101·96	428
South Bonsor (Ideal Synd.) sands	—	—	15·33	64
South Surprise (Begbie & Perry)	5	320	81·13	341
Stator (P. Johns)	—	—	2·02	8
Stranger (J. M. Havnar)	2	142	64·47	271
Tebekwe (A. N. Tyrrell)	15	1,236	144·81	608
Tebekwe 1 (A. N. Tyrrell)	(5)	217	81·49	342
Twin Nugget (Bogwald & Cannell)	2	65	21·05	88
Veracity (J. Fischer) slimes	—	392	42·70	179
Wanderer (Selukwe) G.M., Ltd.	4GR	12,276	1,338·89	5,623
Do. (other sources)	—	—	27·96	115
Welcome Back (F. C. Luxat)	2 & 1 H	363	77·42	325
Do. (sands)	—	350	13·70	58
Gwelo district total			18,064·46	75,863

Matabeleland total .... 35,118·28 ozs.
Value £147,489

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT—				
Acorn Gold Mines, Ltd.	5	555	71·75	301
Do. (sands)	--	360	39·85	167
Agnes (P. S. Triggs)	5	540	181·04	760
Do. (sands)	—	280	14·18	60
Alabama (Rix & Reynolds)	3	90	65·28	274
Auriga (Hartley Pioneer Synd.)	5	245	48·60	204
Baltimore & Virginia (P. A. Enke)	1 Pn	310	59·13	248
Banshee (P. S. Triggs)	2	50	27·87	117
Battlefields (Rhodesia), Ltd. (Minnaar & McArthur)	2C	1,760	202·74	851
Do. (sands)	—	1,408	93·99	396
Do. (slimes)	—	352	11·00	45
Brilliant (Mabel's Luck Synd.)	7 1P	1,047	369·53	1,552
Do. (sands)	—	352	133·90	562
Buller (J. Laing)	5	580	54·52	229
Cardiff (H. Tilbury)	1H	100	23·48	99
Concession and W. Extension (C. E. Simpson)	5 1C 2P	3,192	42·38	2,278
Do. (sands)	—	2,200	115·80	486
Crown II. (Crown Syndicate)	2	200	54·93	231
Do. (sands)	—	200	44·87	188
Cuba (C. C. Hendrie)	2	53	10·20	43
Dalny (Macdonald)	5	860	83·30	350
Do. (sands)	—	856	39·71	167
Dalny 1W (Shagari Mines, Ltd.)	5	470	69·43	292
Do. (sands)	—	270	38·90	163
Dreadnought B. W. E. Masters)	1 C	264	100·53	422
Early Bird (Sun Synd.) sands	—	120	16·24	68
Eiffel Blue & E. Ext. (Willoughbys)	10	1,390	611·91	2,570
Do. (sands)	—	790	74·30	312
Enny Ext. (Ellsmoor & Goodyer)	5	350	76·12	320
George (Heroine G.M. Co., Ltd.)	10	1,080	60·00	252
Giant Mines of Rhodesia, Ltd.	30 2T	10,066	2,321·64	9,848
Glasgow Mines, Ltd.	5	179	146·41	615
Do. (sands)	—	252	78·50	330
Glencairn No. 3 (Glenrosa Synd.)	4	352	278·51	1,170
Do. (sands)	—	230	21·35	90
Golden Valley (J. Mack)	10	800	311·43	1,308
Do. (sands)	—	480	86·32	363
Inez (Harill & Smith)	10	210	38·22	160
Do. (sands)	—	175	34·46	145
Invar (H. Moser)	5	640	76·59	322
Jessie Palmer (Crown Synd.)	(2)	50	14·80	62
Juno (H. R. Nicholl)	5	412	122·02	512
Do. (sands)	—	250	58·70	247
Mazeppa (J. C. Webster)	(3)	55	11·49	48
Midwinter (Midwinter Syndicate)	4	284	49·93	210
Do. (sands)	—	320	29·27	123
Owl (A. Rolfe)	10	1,291	480·30	2,017
Do. (sands)	—	927	168·45	707
Do. (slimes)	—	298		
Peacock (Wellington Mines, Ltd.)	(5)	207	97·01	407
Pickstone Gold Mines, Ltd.	10 1C	3,133	775·43	3,257
Do. (sands)	—	1,020	249·56	1,048
Pomposo (J. Knott)	5	310	146·32	615
Rocky Blue (Brander & Matchett)	2	90	·76	3
Rosaline A. (J. F. Meade)	5	100	32·30	136
Saxon (Sun Syndicate) sands	—	250	21·81	92
Seigneury (N. A. Arnold and Cen. Min. & Inv. Corp., Ltd.)	5	520	253·50	1,065
Do. (sands)	—	266	23·39	98
Shepherds (Phœnician (Rhod.) Co., Ltd.)	5 1T	1,086	318·60	1,338
Do. (sands)	—	1,086	175·91	739
Sid (Sebakwe and District Mines, Ltd.)	5	515	241·91	1,016
Do. (sands)	—	380	71·38	300
St. John del Rey (C. G. Downie)	5	682	115·75	486
Thistle-Etna G.M., Ltd.	1C	2,732	812·74	3,413
Do. (sands)	—	2,291	239·99	1,008
Do. (slimes)	—	551	70·62	297
Trinidad (T. McDowell)	2	115	109·35	459
Do. (other sources)	—	—	1·01	4
Try Me 2 (R. R. Aitkin)	5	150	44·35	186
Do. (sands)	—	325	66·90	281
Warthog (Kelsall & Davidson)	5	26	5·38	23
Do. (sands)	—	40	3·38	14
Washington (I. J. Minnaar)	5	370	290·59	1,220
Do. (sands)	—	310	38·27	161
Hartley district total			11,870·08	49,950
LOMAGUNDI DISTRICT—				
Alluvial (J. Gough)	—	—	13·13	55
Do. (E. A. Warry)	—	—	24·68	104
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	7,757	2,107·95	8,940
Do. (sands)	—	7,536	885·50	3,755
Linnett (A. R. Morkel)	2	722	213·16	895
Lone Hill (F. B. Platt)	2	92	25·98	109
Ventura (Stone & Standen)	2	100	30·57	128
Do. (sands)	—	400	19·96	84
Lomagundi district total			3,320·93	14,070

	No. of Stamps.	Tons Treated	Yield ozs.	Value. £
MAZOE DISTRICT—				
Botha H. (B. G. Byerley)	5	868	81·10	341
Do. (sands)	—	540	70·18	295
Glandore (Harries & Cooke)	2	100	55·73	234
Goth B. (Goth Syndicate) sands	—	500	37·25	156
Honest (G. Brown)	3	170	66·90	281
Hope (Hope Tailings Synd.) sands	—	1,000	66·93	281
Jumbo G.M. Co., Ltd.	30	3,000	622·54	2,646
Do. (sands)	—	1,820	334·71	1,422
Do. (slimes)	—	1,180	122·26	520
Kimberley (Mash.) G.M. Co., Ltd.	6 2 T	3,400	680·06	2,887
Do. (sands)	—	1,350	289·44	1,221
Do. (slimes)	—	1,950	162·45	686
Micky (Micky Syndicate)	2	297	164·12	689
Mitre 8 (Bishop's Syndicate)	1D	6	8·65	36
New Found 1 N. (D. H. Curry)	5	560	209·82	881
Do. (sands)	—	800	75·79	318
Oceola G.M. Co., Ltd.	5	520	273·28	1,148
Umkulu D. B. 1 W (Head and Manson)	2	60	11·54	48
Do. (sands)	—	740	74·94	315
Venus (Giles & Southey)	2	386	42·19	177
Xmas 1 N.W. (Pearce Laland Synd)	2	220	57·27	241
Mazoe district total			3,507·15	14,823
SALISBURY DISTRICT.—				
Arcturus (L. Chiappini) sands	·	600	91·46	384
Banker (Dyason & Wells)	3	52	7·75	33
Briar (J. Seton Rogers) sands		314	16·56	69
Inyague 3 (P. L. Peters)	2	160	116·77	490
Joker (Manduza Syndicate)	2	108	90·36	379
Louise Grand (H. S. Plant)	1H	1,186	96·35	405
Do. (sands)	·	1,186	95·75	402
Mont d'Or (Claxton & Bussell)	2	208	84·45	355
New Full Back G.M. Synd., Ltd.	2	59	10·20	43
Pannings (H. H. Crampton)	—	—	4·01	17
Salisbury district total			613·66	2,577
UMTALI DISTRICT.—				
Cairndhu 2 W (E. K. Evans) slimes	—	321	28·55	120
Do. (other sources)	—	—	1·28	5
Champion (J. Buchanan)	5	797	100·35	422
Do. (sands)	—	600	138·13	580
Do. (slimes)	—	230		
Elgin (Umtali Waterfall Synd.)	10	556	205·09	861
Do. (sands)	—	372	55·45	233
Do. (slimes)	—	184		
Kent (E. Evans)	5	550	144·17	605
Do. (sands)	—	420	31·60	133
King's Daughter D.B. (Umtali Waterfall Syndicate) slimes	—	896	126·98	533
Pilgrim 2 E. (J. Meikle)	5	370	100·39	422
Quagga (Quagga Syndicate)	5	397	91·18	383
Rezende Mines, Ltd.	105	16,235	1,887·78	8,010
Do. (concentrates)	—	152	546·75	2,283
Do. (sands)	—	2,381	345·80	1,467
Sheepskin (H. Norris)	5	350	30·44	128
Two Sisters (F. E. Markham)	2	150	66·91	281
Umtali district total			3,900·85	16,466
VICTORIA DISTRICT.—				
Texas (G. Scott)	10	1,186	308·11	1.294
Do. (sands)	—	650	95·01	399
Victoria district total			403·12	1,693

Mashonaland total	23.615·79 ozs.
Value	£99,579
Grand total gold output	58,734·07 ozs.
Value	£247,068

SUMMARY.

Gold—	*Ozs.*	*Value.*
Matabeleland	35,118·28	£147,489
Mashonaland	23,615·79	99,579
Total	58,734·07	£247,068
Silver, ozs.	10,872·02	1,138
Lead, tons	23·50	422
Chrome iron, tons	8,724·80	19,475
Diamonds, carats	47·50	175
Coal, tons (sales)	18,894·00	5,931
Total value August output		£274,209

HEALTH ON RHODESIAN MINES.

Native Mortality—Interesting Statistics—Ravages of Pneumonia.

In his report for the year 1912, the Medical Director deals exhaustively with the health of native mine labourers. He refers to the abnormal climatic conditions existing, there being a drought during the rainy season of 1911-12, and practically no rain fell before January, 1913. The effects of the drought, which was general over the Sub-Continent, were felt, not only in Southern but also in Northern Rhodesia, our chief recruiting centre for native mine labourers, and more especially affected natives coming to work, in that, there being a shortage of fresh foodstuffs, they arrived on the mine in a lowered condition, and unsuited for the arduous labour they contracted to perform. On the mines themselves fresh vegetables were in many instances unprocurable, whilst meal and meat were enhanced in price. Further, slaughter stock suffered from the drought and lack of pasturage, and the meat in consequence was not as good as usual. All this combined to increase the cost of labour and to lower its general efficiency, and rendered the labourers less capable of resisting disease. In other words, the evil effects on the mortality rates of a famine year were particularly marked in the case of native mine labourers.

Of Southern Rhodesian natives there were employed 12,943, and there were 235 deaths, of which 182 were due to disease and 53 to accidents. This gave a death-rate of 14·06 from disease and 4·09 from accidents, the total death-rate being 18·15. The statistics relating to other classes of natives were as follows: Portuguese, 6,608 employed, 168 deaths (145 from disease and 23 from accidents), 21·94 death-rate per mille per annum from disease, and 3·48 from accident, giving a total death-rate of 25·42 per mille; Northern Rhodesian natives, 9,062 employed, 593 deaths (543 and 50), disease death-rate, 59·93, accidents, 5·50, total death-rate, 65·43; Nyasaland natives, 5,078 employed, 208 deaths (179 and 29), disease death-rate, 35·25, accidents, 5·71, total death-rate, 40·96; other natives, 978 employed, 32 deaths (24 and 8), disease death-rate, 24·54, accidents, 8·18, total death-rate, 32·72. The number of employed shown in this return represents the average number of boys actually on the mines at the end of each month, and does not represent the daily average of boys employed.

NORTHERN RHODESIA BOYS.

This is the first year, the report continues, that this return has been available, and therefore comparisons with former years are not possible. It will be noted that the death-rate amongst the Northern Rhodesian natives is out of all proportion to that of natives from Southern Rhodesia and Portuguese territories, and is in excess, though not to the same extent, of the death-rate amongst natives from Nyasaland or British Central Africa. It might naturally be assumed from these figures that natives from Northern Rhodesia are from some cause or other unsuited for work on the mines of Southern Rhodesia. This, however, is not altogether true, as other factors exist which tend to raise the death-rate amongst this class, and these have to be taken into account. Natives from Southern Rhodesia are, as a rule, locally recruited, and for short periods of service, rarely, if ever, extending over six months at a time, and often much less. They are not far distant from their own homes, and, engaging as they do as monthly servants, can leave the mine when they find they are unfit or disinclined for further work. Natives from north of the Zambesi, on the other hand, are engaged for longer periods, and cannot, nor do they desire, to leave before the termination of their contract, nor undertake the long and wearisome journey to their own homes before accumulating sufficient money to recompense them for the labour involved in getting to and from the mines; whilst natives engaging themselves through the agency of the Labour Bureau are, as a rule, contracted for one year.

Natives from Portuguese possessions are practically on the same footing as natives belonging to Southern Rhodesia, coming, as they do, largely from districts just over the border, whilst among them, as with natives from Nyasaland, are included a large proportion of labourers permanently resident on mines, or who return again and again after short holidays, and who may therefore fairly be classed as habitual labourers. Northern Rhodesia, however, is practically the only field where fresh labour supplies can be recruited, and to that territory the operations of the Labour Bureau are entirely confined. This organisation taps the sources of labour and brings down the raw recruit to work on the mines. This recruit, returning home after his period of contract, may, and often does, elect to return to mine work, but then, having gained in knowledge of what is before him and what to expect, he comes almost invariably on his own account, being thus unfettered and independent. It is therefore seen that from Northern Rhodesia comes the bulk of the raw labour, and it must be accepted that in the first few months of service, or even the first year of service, the native mine labourer is undeveloped for the work he has contracted to perform, is less inured to its hardships, and is more inclined to succumb to the various vicissitudes associated with change of climate, and the nature of work to which he is exposed. This must be the inevitable result of the formation of an industry which at all times, and in all climes, is classed as one of the dangerous trades.

MORTALITY FROM PNEUMONIA.

Turning to the diseases which are most prevalent amongst native mine labourers, we find that out of the 1,236 deaths recorded, no fewer than 668 were due to pneumonia, 63 to phthisis, and 16 to other diseases of the chest. That is, 60·44 per cent. of the total deaths recorded were due to diseases of the respiratory organs. In my report of last year I drew particular attention to the continued high mortality on mines from pneumonia, and there expressed the hope that the researches of Sir Almroth Wright into the cause and prevention of this disease amongst native mine labourers on the Rand would be followed by results from which we all might profit. I regret, however, that up to date the results attained have not yet been followed by any marked improvement in this respect. Final reports have not yet, however, been published. One of the results of the drought and the lack of fresh vegetables was a marked increase in the number of cases of scurvy and deaths from this cause. There were 1,320 cases with 81 deaths reported, as compared with 955 cases and 33 deaths in 1911; whilst 69 deaths were reported from dysentery, of which a proportion were probably scorbutic in origin.

Village Deep.

During the quarter a profit of £40,120 was made at the Village Deep. The reef disclosures were as follows:—Main Reef Leader: Distance exposed, 2,355 feet; width, 35 inches; assay value, 47s. 2d. South Reef: Distance exposed, 183 feet; width, 20 inches; assay value, 95s. 9d. An overwinding accident at No. 2 shaft was responsible for a decrease in the tonnage milled for July of approximately 11,000 tons. Operations throughout the quarter have been seriously hampered by the shortage in the supply of native labour which followed the strike; natives coming forward for service are still less in number than those returning to their homes on the completion of their contracts. Of its complement of 4,242 natives, only 2,578 were in the employ of the company at September 30, or 710 less than at June 30; this is reflected in the decreased sorting and tonnage milled. The main incline shaft (Turf section) has been sunk 145 feet, and is now 66 feet below the 21st level; the footage of development is 2,679 less than the previous quarter, but the position of the ore reserves continues to be satisfactory. Expenditure on capital account was £3,524; the amount still required to complete the work at present on hand is £32,016.

Roberts Victor Diamonds.

The following were the results of operations at the Roberts Victor mine during the month of November, 1913:—16,885 loads washed yielded 4,576 carats. The removal of reef, to prepare for washing on a larger scale, will necessitate the cessation of washing operations for about four to six weeks.

Main Reef West.

During the quarter ended September 30 the Main Reef West made a profit of £15,105 3s. 7d., equal to 5s. 8·566d. per ton milled. On capital account there was expended an amount of £4,705 19s. 7d. On development there was accomplished a total of 3.588 feet. Excluding No. 4 shaft, station, main crosscuts and prospecting work, 2,420½ feet or 83·8 per cent. has been on reef. Of this 920½ feet or 38 per cent. has been payable of an average value of 6·4 dwts. over 48 inches; and 1,500 feet or 62 per cent. has been unpayable of an average value of 3·3 dwts. over 48 inches. Of the payable portion all the footage was on the Main Reef Leader. The ore reserves at September 30 amounted to 559,310 tons.

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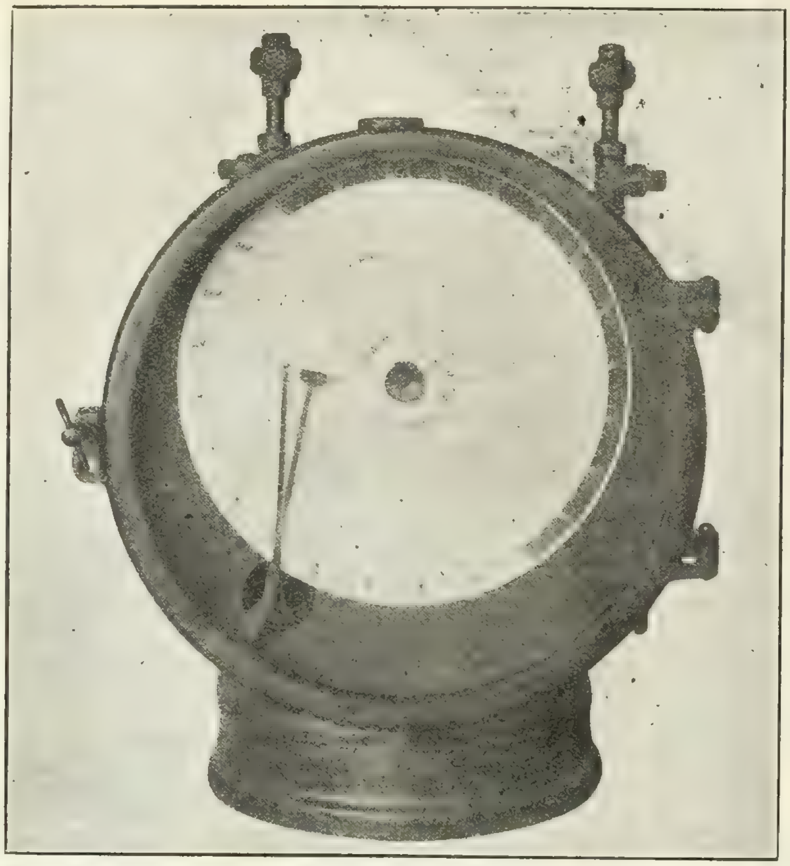

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Engineering Notes and News.

IRRIGATION ENGINEERING.

South Africa Must Develop its Own Practice—A Lesson From America.

[By A. M. A. STRUBEN, A.M.I.C.E.]

The following, which will doubtless be of considerable interest and value to many of our readers, was read before the third annual congress of the South African Irrigation Association, held at Graaff-Reinet on the 11th ult.:—

In an Association of Irrigators such as this, who are laying the foundations of irrigation in South Africa, careful consideration can with advantage be given to the means—the engineering practice—by which this purpose can best be achieved. The writer is strongly of opinion that South Africa must develop its own engineering practice in irrigation, and not too slavishly follow the practice of other countries, as differences of conditions, of physical features, seasons, materials and labour, will frequently render what is good under the conditions of those countries utterly bad here. In the development of irrigation works in this country the farmers have shown remarkable aptitude in making the most of local circumstances and frequently exhibit what may be termed an inborn engineering instinct. They have, often unaided by scientific knowledge, carried out works in a sound businesslike manner and at low cost. These works, though sometimes of not inconsiderable size, are small when compared with standards in other parts of the world, and are only the fore-runners of more ambitious schemes that must inevitably arise to cope with the rapid development which is looked forward to in South Africa. To develop sound irrigation engineering practice here, it will, therefore, be wise to study the works and methods of other lands, and to glean "tips" that may with advantage be used by us. For this purpose it will probably be found most profitable to study the practice of young countries, as these have had the advantage of the experience of older countries to guide them, and to study only such works and methods as are well suited to our local conditions. In this connection America offers some valuable object-lessons which will here be touched upon. The evolution of irrigation there appears to have proceeded on much the same lines as in this country. The first settlers were pastoralists; gradually, to supply local wants, small irrigation works were started. These gave place to more ambitious works, till ultimately the agriculturist absorbed the pastoralist in many places. Then again in some localities irrigation was forced upon the people as the only means of living outside beggary. For example, the Mormons, due to their proclivity for accumulating wives, became unpopular with their neighbours, were driven forth, made a great trek into the wilderness, and founded what to-day is a thriving, wealthy community in what was practically desert. If you suddenly wake up after a long night's train travelling in Utah, before your faculties are fully alive, you imagine "I'm in Oudtshoorn," for you see around you green fields, furrows, water-leaders and farmers for all the world like our own. This being so, we are sure to find much in common and much that we can glean to our profit. One of the most striking things to be noted throughout English-speaking America—no matter whether it is the United States or Canada—is its vitality. On all sides one sees unmistakable signs of three great things—originality, energy, progress. These signs are also visible in its irrigation practice and in no small degree are the reason of its success. Where huge acres, running in some schemes into hundreds of thousands of acres, are involved, the distribution of water is a serious problem. This seems to have been solved in a very practical way in America, and at a small cost comparatively. For example, in large schemes the cost of distribution, including all management, is placed at from 25 cents to one dollar (that is roughly 1s. to 4s.) per acre per annum. For large schemes the organisation consists generally of an engineer-in-chief with clerical staff, water-masters and ditch-riders. The ditch-riders effect the actual turning on and off of the water to each irrigator, and measures the quantity he receives. They report to the water-master, who regulates the distribution, deals with the irrigator, and is responsible to the engineers, who also keeps control of new works, repairs, maintenance, etc. The actual quantity of water used is generally measured by means of simple weir notches. Payment for water in the best practice is made on quantity such as per "acre-foot" of water consumed. This practice is sound in that it enables the irrigator to know what he is doing to improve his methods, and to get the best returns for his money, while the general community benefits by the more economical use of water brought about. It would be a big advance in this country if our irrigators would follow this practice, as it is certain that it would lead to great benefits in the long run. In the scheme referred to under the best practice the irrigator makes application by means of post-cards, stating the time and quantity he requires to be turned on, and again when he wants it turned off. This is done by the ditch-rider, as the irrigator is not allowed to touch the control-gates, nor the water, until it reaches his land. This sounds irksome, but in practice works smoothly, and is found the only practical way that water for large areas can be simply safely and cheaply controlled. Telephone lines are laid along the main canals, and to important points, so that control is simplified. For large schemes in this country this system is well worthy of study. In the distribution of water a curious custom is found in places which practically amounts to borrowing water at one point and returning an equivalent amount at another. In methods of work anything to lessen the high cost of labour is welcomed, as common labourers get from 8s. to 12s. per day and skilled labourers as much as they do in South Africa. In canal excavation and bank building the methods employed in some cases resemble what may be seen in this country—ploughs and scrapers, of the drag (Fresno) and wheeled type, worked by mules or powerful horses. Where the work is of sufficient size to warrant the expense, elevating grades are used. These are huge ploughs that turn up the ground, with elevating belts that deliver it into "dump-wagons" that travel alongside the grader. These dump-wagons follow one another in a string, each taking its turn at being filled, then travelling to the dumping point, where the movement of a lever dumps the whole load. These graders do a big amount of work, and are sometimes hauled by traction engines, but are clumsy and would only pay in this country under exceptional circumstances. One thing these methods of work teach is the enormous advantage to be gained by the use of big powerful horses, two huge creatures doing at times the work that we should ask of four to six mules. Tractors are largely coming into use for agricultural and transport purposes, and do excellent work. In concrete work, where cement is expensive, sand-cement is used where the cost of plant is justified. This is made by grinding up sand and cement to an impalpable powder. Concrete mixers and elevators largely take the place of hand-mixed concrete, effecting economy and giving better results. Concrete is generally mixed "sloppy," and in some instances is run into place through shoots. In heavy works steam shovels or dragline scrapers are largely used. They do effective work, but will only be justified in a country such as this when the work is of great magnitude. Care will have to be exercised here in the introduction of these mechanical appliances, as their greatest objection lies in the fact that they require skilled labour, and repairs are not easily effected in a land where workshops are rare and mechanics a luxury. Without wishing to be dogmatic and to invite discussion, the writer suggests that the irrigation policy of this country should be shaped somewhat on the following lines:—1. Examine the factors likely to affect a proposed scheme carefully before taking action, especially with regard to: (a) Engineering features and cost; (b) agricultural prospects and possible crops, having in view its soil, climate and labour conditions; (c) its financial aspect, taking into consideration cost of production, present and ultimate markets. 2. Take advantage of natural facilities if work is to be proceeded with. Don't go blindly ahead. Keep the end in view and make means serve this end at the minimum of cost consistent with sound work and efficiency. Spend time and money in location of the work, as this initial expenditure often saves large sums ultimately, costly difficulties being frequently avoided by careful selection of site. In this connection the engineer should never be too proud or too stupid to take the opinions and observations of local people into consideration, as he will often find the simple Boer thoroughly sound in principle, though he may be deficient in technical ability. 3. Practice sound finance by making every pound go as far as possible while securing efficient works, capable of doing their job, remembering that at high rates of interest money doubles itself in comparatively few years, and that money sunk in unnecessary works can never be regained and lessens the earning capacity of a scheme. On the other hand, don't cheese-pare when expenditure is called for—but make works safe as far as it reasonably possible. It will often in an unproved locality be necessary to take risks, but these should be squarely faced and provided for by reserve funds or other means. In such localities it will often be sound to put up works that will have a reasonable life in preference to more costly permanent structures, facing the fact that they will necessitate renewal or replacement, if the scheme proves a success. The money thus saved will often enable a district to be set on its feet, while under the worst conditions—if the scheme should fail—the loss is not crippling. On the other hand, where conditions are well known, and success assured, it will sometimes be economy to incur the extra cost of permanent works at the start. In considering the financial aspect of a scheme, take into consideration: (a) Interest on capital; (b) sinking fund based on life of structures; (c) maintenance charges. 4. Don't forget the future.—Much harm has been done by endeavouring to do everything as if only the present mattered. This is unsound in an individual as in a State. It will often be best to do part of a work at the start, leaving the balance to be comploted in the future as funds come in from the first part, or as markets and conditions of settlement make things easier. It is also not fair to posterity to leave it nothing to do. In all works consider how they would be effected, if expansion, even though not contemplated at the time, is called for by a change of circumstances. For instance, consider how future storage works above your works would affect them? 5. Don't be headstrong.—Be wide-minded enough to recognise that new ideas and methods are not always dangerous, and may possess features that will help to line your pockets. Don't be bashful in taking ideas from other lands or individuals, but modify them to suit your local conditions or requirements. Allow scope for individuality and originality, provided this is supported by sound practice. The present tendency to kill private enterprise by depending more and more upon Government aid in every shape and form is likely to cramp expansion and lead to stagnation in the long run. No monopoly of any kind is sound for long. 6. Adopt sound units of measurement.—Don't be satisfied with the slip-shod measures so often used, as the uncertainty created affects prices and in the long run does harm. As far as possible deal by weight in preference to the unknown quantity represented by the bundle or even the bag. In handling water, adopt some standard such as the "Cusec" or "second foot" (one cubic foot per second) for flowing water, and the "acre-foot" (water an acre in extent one foot deep) for standing water or water applied to crops. Such standards will at once place the irrigator in touch with some of the best literature and practice in the world, which is Greek to him if he is only used to such standards as say "about a 4-inch pipe." A 4-inch pipe is a most useful article at times, but it conveys no idea of quantity of water carried unless coupled with head, length of pipe, and troublesome formulae. The writer would like to see the "acre-foot per day" used even for flowing water, as it at once shows the irrigator how many acres he could cover to any given depth if he allowed the particular stream to flow for a day. If he wishes to keep up with the times he will be bound to get acquainted with these measures some day; why not save time and energy and use them in daily life right away. 7 Be Tolerant.—When you criticise the writer, remember the story, "Don't shoot at the pianist, he is doing his best." His object is to bring before you ideas that may be new to some, to stimulate interest in the work and efforts of other lands, and, lastly, to invite discussion. By such means the cause we all have at heart, the irrigation of South Africa, may in some measure be advanced.

Finance, Commerce, and Industries.

The Trade Position.

At the monthly meeting of the Chamber of Commerce last week, the President pointed out that there had been a net decrease in the railway returns for the 46 weeks of the present year, as compared with the corresponding period of last year, of £100,915. The most noticeable decrease had been in coal, viz., £117,286. There had been an increase in passengers' receipts of £71,165, and in parcels £14,489. The decrease in goods was £49,109. It was satisfactory to find from the figures of last week that there had been an increase in the weekly earnings on coal of £6,364. With regard to tonnage for the Union the figures furnished by Mr. Hoy showed that from January to August this year there had been an average monthly increase of approximately 49,600 tons, as compared with the corresponding period of last year. Of that increase, coal had been responsible for 46,100 tons monthly. That would be thought to dissipate any remaining fears. The Chamber made an unwise statement when they said recently, in reply to the General Manager, that there had been no serious decrease in railway tonnage. They found, on the contrary, there had actually been an increase. It was no doubt true that Johannesburg itself was suffering from certain slackness, but the trade of South Africa was in a sound condition, as appeared from the latest returns.

* * * *

Amalgamated Properties.

The report of the Amalgamated Properties of Rhodesia (1913), Ltd., states that the company was registered on August 8 last, with a capital of £800,000, divided into 4,000,000 shares of 4s. each, of which 3,767,943 shares of 4s. each have been allotted credited with 3s. as paid up thereon, in part satisfaction of the purchase of the assets and undertaking of the Amalgamated Properties of Rhodesia, Ltd. (in liquidation); the amount of cash received in respect of such shares is £92,667. Seven shares of 4s. each have been allotted for cash, and the amount of cash received in respect of same is £1 8s. The abstract of the receipts and payments made up to the 24th ult. shows that £17,500 underwriting commission has been paid, and preliminary expenses £1,999. Payments on account of liabilities of old company and interest thereon figure for £54,149, cash at bank amounted to £18,237, and there were loans on contango, etc., of £3,597. The preliminary expenses of the company are estimated at £7,500.

Carolina Asbestos Co.

The report of the directors for the year ended 30th September, 1913, to be submitted at the seventh ordinary general meeting of shareholders to be held on Friday, 12th December, 1913, states:—The capital of the company remains unaltered and consists of £52,000 in 52,000 shares of £1 each, of which 40,000 shares are issued fully paid up and 12,000 shares are held in reserve. The property comprises all the rights to asbestos on the farm "Diepgezit" No. 33, district Carolina, together with facilities for working same. No work has been carried out at the property during the year. An option to acquire your property, on account of which negotiations were instituted at the time of the last ordinary general meeting and which resulted in an agreement being entered into, lapsed owing to the non-fulfilment of the terms of that agreement. The income and expenditure account shows that the expenses during the year exceeded the income by £141 3s. 2d., and this amount has been added to the debit balance shown in the income and expenditure account at 30th September, 1912, making a total debit balance on that account at 30th September, 1913, £3,967 14s. 7d.

THE WEEK IN THE SHAREMARKET.

Improving Tendency—Bargains Being Picked Up—Dividend Expectations.

A FIRMER tendency was noticeable in the market during the week, though it resulted neither in greater activity nor in higher prices. London has sent a few buying orders, which combined with dividend expectations have had a good effect. That there are now several Rand stocks standing at bargain levels is apparent to many; and wise people are picking up some lines at bed-rock prices. It is not to be expected that dividends will be surprisingly good, since directors will doubtless decide to husband resources till the labour outlook brightens. In tin and diamonds the week has seen little activity. Pilandsbergs have sagged away despite the excellent report from the property, where it would appear that a mine is being opened up. Directors of both Pilandsbergs and Buffelsdrifts visited those areas during the week and express themselves as confident of success.

* * * *

	Fri., 28th.	Sat., 29th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thurs., 4th.
Adair-Ushers	0 3*	0 3*	-	0 3*	0 3*	0 3*
African Farms	15 0*	15 0	15 6	15 4*	15 0*	15 0*
Apex Mines	18 6†	17 6*	18 0	17 9	17 6*	17 6*
Bantjes Cons.	13 6*	13 6*	13 6*	13 6*	13 6*	13 6*
Benoni Cons.	2 3†	2 0*	2 2†	2 3†	2 3†	1 6*
Blaauwbosch Diamonds	—	90 0*	92 6*	—	90 0*	
Brakpan Mines	—	—	—	—	43 9*	43 9*
Breyten Collieries	-	27 0*		—	27 6*	27 0*
British South Africa	—	—	18 6*			18 6*
Bushveld Tins	0 7	0 7*	0 7*	—	0 7*	0 7*
Cinderella Cons.	—	—	—		3 0†	-
City and Suburbans	48 0*	48 0*	48 0*	48 0*	48 0*	48 6
City Deeps	53 6*	54 0*	55 0†	54 0	53 6*	53 0*
Cloverfield Mines	4 1*	4 1*	4 0*	4 1*	4 0*	4 1*
Cons. Investment	—	17 0*	—	16 0*	16 6*	16 6*
Cons. Langlaagtes	30 0†	28 0*	-	28 3*	29 0†	
Cons. Main Reefs	16 3	16 9*	17 0*	17 0	17 0*	17 0*
Coronation Collieries	—	12 6*	-			12 6*
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5*	0 5*
Crown Diamonds	7 6*	7 9*	7 10*	7 9	-	
Crown Mines	120 0*	120 0*	120 0*	120 0*	120 0*	
Doornhoek Tins	—	5 9	—	5 9*	5 10*	6 0*
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	8 0*	8 0*
East Rand Coals	1 9*	1 9	1 9*	-	1 9*	1 9*
East Rand Deeps	1 3*	1 2*	1 2*	1 2*	1 3*	
East Rand Props.	-	41 0†	40 6†	40 6		-
East Rand Debentures	—	-	—	£89†	£89†	
Eastern Gold Mines	1 0*	1 0*	—	1 0*	1 0*	1 0*
Frank Smith Diamonds	6 3*	6 3*	6 3	6 6	6 6	5 6*
Geduld Props.	20 0*	20 6*	20 6*	20 0*	20 6	20 0*
Glencairns	3 0*	3 3†	—			
Glencoe (Natal) Collieries	—	7 0*	—	7 0*	-	7 6
Glynn's Lydenburgs	13 0*	13 0*	14 0†	13 0	13 0*	13 0*
Government Areas	18 9	18 0*		17 6*	17 6	17 9*
Jumpers	—	—	—	4 0†		
Jupiters	3 9†	3 3*	3 3*	3 3*	4 0	4 0
Kaalfontein Diamonds	0 5*	0 5†	-	0 3*	0 3*	0 4*
Klerksdorp Props.	-	—	1 9*	1 10*	1 11*	1 10*
Knight Centrals	8 0*	7 9*	7 9*	7 10	7 3*	7 0
Lace Props.	2 6*	—	2 9†	2 9†	2 6*	2 3*
Luipaardsvlei Estates	8 6*	8 6*	8 6*	8 6*	8 6*	8 6*
Lydenburg Farms	2 10*	2 10*	2 10*	2 10*	2 10*	2 10*
Main Reef Wests	6 6*	7 6†	6 6*	6 0*	6 3*	6 0*
Do. Debentures	£63*	£63*	£63*	—		£63½*
Meyer and Charltons	—	—	—	—	100 0*	—
Middlevlei Estates	0 9*	—	0 9*	0 9*	0 9*	—
Modderfontein B.	—	—	—	—	—	77 6*
Modderfontein Deeps	33 0*	33 6	34 0	33 9	34 0	33 9
New Boksburgs	0 10*	0 9*	0 10*	0 10*	0 10	0 9*
New Eland Diamonds	30 0†	30 0†	30 0†	30 0†	30 0†	
New Era Cons.	5 0*	5 0*	5 0*	5 0*	5 3*	5 3*
New Geduld Deeps	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
New Kleinfonteins	21 0*	21 0*	—	21 0*	21 0*	21 0*
New Modderfonteins	—	225 0*	225 0*	—	225 0*	225 0*
New Rietfonteins	—	—	—	—	2 6*	2 6*
New Unifieds	13 6*	13 9*	13 6*	13 6*	13 6*	13 6*
Orange Diamonds	1 10*	1 10*	1 10*	1 10	1 9*	1 9*
Piggs Peak	9 0*	9 0*	9 0*	9 0*	—	9 0*
Pretoria Cements	45 3*	45 0*	45 0*	45 0*	45 0*	45 6*
Princess Estates	4 6*	—	4 6*	4 6*	—	—
Rand Klips	2 1*	2 0*	2 0*	1 11*	1 11*	1 11*
Rand Nucleus	1 6*	1 4*	1 4*	1 6*	1 6*	1 5*
Randfontein Deeps	3 0*	3 3†	2 9*	—	—	3 0*
Randfontein Estates	23 6*	23 0*	—	—	—	—
Robinsons	—	50 0*	—	—	—	—

*Buyers. †Sellers

	Fri., 28th.	Sat., 29th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thurs., 4th.
Robinson Deeps	28 6	—		—	—	28 0*
Rooiberg Minerals	28 6*	28 3*	28 6*	29 0	29 0*	29 0*
Rood. Durban Deeps	19 0*	19 0*	19 0*	19 0*	19 0*	19 0*
Ryan Nigels	3 6†	—		—	3 0*	3 0*
Shebas	4 9*	4 9*	4 9*	4 9*	5 0*	5 0*
Simmer Deeps	1 0*	—		-	—	1 0*
S.A. Breweries	—		40 0*	-	40 0*	
S.A. Diamonds	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
S.A. Lands	2 10*	2 10*	2 10*		2 10*	2 10*
Springs Mines	10 9*	11 0*	11 0	10 9*	10 6*	10 6*
Steyn Estates	8 9*	8 9				
Sub Nigels	7 6*	7 9	7 0	8 0†	7 6*	7 6*
Swaziland Tins	—	42 0*	45 0†	42 0*	42 6*	44 0†
Transvaal Coal Trust	29 0*	29 0*	28 0*	29 0*	—	28 9*
Transvaal Cons. Lands		20 0*	-	—	19 0*	-
Transvaal G.M. Estates	48 0*	48 0*	48 6*	50 0†	49 6†	49 0†
Tudors	2 0†	—	-	-	2 0†	—
Van Ryn Deeps	34 0	34 0	34 6	34 6	34 9*	34 9
Village Deeps	-	35 0†		-	—	35 0†
Vogelstruis Cons. Deeps	1 0†	0 9†	1 0†	-	1 0†	—
West Rand Cons.		8 0†		-	8 6*	—
Western Rand Estates	2 0†	—	2 0†		2 0†	-
Witbank Collieries	-	41 0*	41 0*		42 6	41 0*
Witwatersrands	67 0*	-	70 0†	69 0†	-	68 9†
Witwatersrand Deeps	—	54 0*	53 0*	53 9	54 0*	54 0
Wit. Townships	22 6†		21 0†	20 0†		-
Wolhuters	12 6	12 0*	12 3	12 3	11 0*	12 0*
Zaaiplaats Tins	33 0*	33 0*	32 6*	32 3*	32 0*	32 3

*Buyers. †Sellers.

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NOTICE IS HEREBY GIVEN that a DIVIDEND (No. 6) of 20 per cent. (four shillings per share) has been declared, payable to all Shareholders on the 31st day of December, 1913.

The Transfer Books of the Company will be closed both in Johannesburg and London from the 1st to the 7th days of January, 1914, both days inclusive, and the Dividend will be paid in February, 1914.

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T. E. DUCKLES,
Secretary.

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Piston Rods, 5¼in. diameter, steam; Air, 4¾in. diameter; Crank Pin, 7in. by 9in.
Intercooler, having about 850 square feet of brass tubes for water circulation.
Slide Valves on Steam Cylinders, with Meyer Expansion Gear.
Air Cylinders, Cast Steel Valves, of the Walker Higged Gear.
Bedplates of Box Section, with Adjustable Pedestals for support of Crank Shaft.
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Air Pressure, 70 lbs. per square inch.
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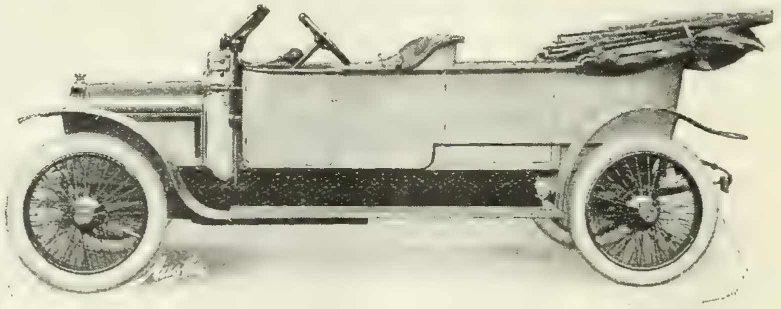

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Automobile Notes.

It is curious how often even some old hands will, when ascending a hill, persistently hang on to the top gear, and call attention with pride to the performance when the car finally staggers to the summit by the aid of a slipped clutch. The last part of the ascent is frequently made by a series of jerks at a pace very much slower than would have been accomplished on the next gear with the engine running at its most effective number of revolutions. But the satisfaction of having accomplished on "top" what other cars would change down for—as the designer of the engine intended—appears to outweigh the risk of damage which the undue strain is likely to bring upon the mechanism. The engine does its best work when running at a certain speed, and the gears are provided in order that this may be maintained without reference to the car speed—which must vary according to the nature of the country traversed.

* * * *

The persistence with which drivers (mostly coloured) of heavy horse-drawn vehicles adhere to the tram-lines, especially on the main suburban road, is a source of constant annoyance to the drivers of faster traffic overtaking and wishing to pass. A remonstrance is more often than not met with foul-tongued abuse, and, unless a policeman happens to be in the vicinity, it is useless to ask for the name and address of the offender.

* * * *

The police cannot be everywhere, and these gentry are cute enough to mend their manners whenever they become aware of the presence on the scene of a member of the force. The excuse generally offered is, that the signal of the overtaking vehicle was not heard, though it is frequently quite obvious that this is not the case. Generally, however, the noise made by their vehicles is enough to drown the sound of any ordinary hooter or bell, and the only remedy of the evil is, that offenders should be taught, through the police court, that by not keeping to their proper side of the road they are breaking the law, and are liable to punishment.

* * * *

The duty, therefore, of bringing such offenders to account devolves mainly upon other users of the road, and, because it is a duty which entails considerable loss of time—which many are unable to afford—and inconvenience—which others are loth to accept—the culprits are allowed to clatter along the middle of every busy thoroughfare obstructing general traffic throughout the Peninsula.

* * * *

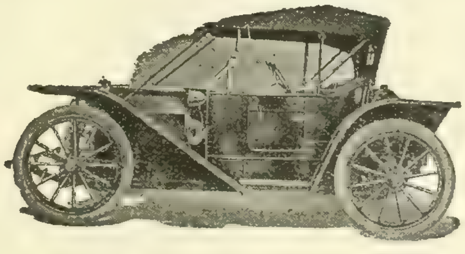
It is to the class of road user that has the spare time, but lacks the inclination to assume the trouble and inconvenience, that the appeal must be addressed to take action to remedy this state of affairs, and to bring home to the offenders, by stern measures, the obligations under which they stand towards other users of the road. A few convictions, a few fines, some direct advice from the bench, and the news would soon go round tnat the old order had changed, and that it no longer paid to ignore the rules of the road.

* * * *

The inconvenience caused by the glaring headlights of motor cars, and the desirability of screening them when not required for driving purposes cannot be too often urged. The dazzling effect on the eyes might easily be the cause of a serious accident, as was nearly the case in an experience related by a foot passenger the other day. He was entering a well-lighted, busy street from a narrow side street, and in passing the corner building was met by the brilliant rays of a pair of acetylene head lights on a car which appeared to be moving obliquely towards the pavement from which he had just stepped with the intention of crossing. It straightened out, however, and after it had passed he moved forward to cross. In doing so he was just brushed by the mudguard of a carriage going in the same direction and round which the motor car had swung and passed. Although the street was well lighted, he was so dazzled by the intense glare that the carriage with which he nearly collided was for the moment blotted out of his vision.

* * * *

This danger has gained recognition in other countries. In Chicago, U.S.A., a by-law has been adopted which provides that "it shall be unlawful . . . within the city limits to use any acetylene, electric or other bright head light, or any head light the rays from which shall be intensified by any parabolic or condensing lens in front of the light, unless such head light shall be properly shaded so as not to blind or dazzle any users of the highway, or make it difficult or unsafe for them to ride, drive or walk therein."



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UNION MINERAL OUTPUT FOR OCTOBER.

Decrease of £114,125—Gold, Coal, and Base Metal Figures.

Last month the mines of the Union produced minerals of the total value of £3,433,792, as against a total of £3,245,634 in September, an increase of £188,158. The details of the production in October are as follows:—

Gold	£3,052,994
Silver	9,490
Coal . .	189,675
Base minerals other than coal	181,633
Total value	£3,433 792

The output of diamonds is published half-yearly.

GOLD.

The following table shows the number of mines working in the various districts declaring gold and the district outputs for October:—

	No. of mines.	Stamps.	Tubes.	Output. fine ozs.
Witwatersrand .	54	9,265	283	687,692
Heidelberg	2	100	2	6,596
Klerksdorp . .	3	69	2	2.977
Ottoshoop	1	5	--	41
Barberton	11	197	3	7,494
Pilgrims Rest .	14	152	5	13,524
Pietersburg	3	30	-	315
Totals for Transvaal	88	9,818	295	718,642
Totals for Cape . .	—	—	-	8
Totals for Natal .	1	5	—	84
Totals for Union ...	89	9,823	295	718,735

COAL.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s.	d.
Springs Brakpan	4	55,821	39,139	4	11
Middelburg ...	16	395,523	338,090	4	5
Other districts ...	8	70,211	66,131	4	0
Totals for Transvaal ..	28	521,555	443,360	4	5
Totals for Cape ..	9	6.597	5,340	11	1
Totals for O.F.S. ...	5	63,068	53,446	5	3
Totals for Natal	20	319.065	244,462	6	0
Totals for Union	62	910 285	746,608		

COPPER AND TIN.

The following is a statement showing the output and shipments of copper and tin for October.

Copper

	Tons.		Shipments.
Transvaal	671	.....	£18,565
Cape	1,117	......	114,489
Totals for Union.	1,788		£133,054

Tin.

	Tons.		Shipments.
Transvaal .	331	......	£36,109
Cape	5	. .	
Totals for Union.. .	336	......	£37,318

OTHER MINERALS.

The sales and shipments of minerals, other than gold, coal, copper and tin, were:—

	Tons.		Value.
Asbestos ...	65	......	£1,071
Graphite	2	. . .	74
Magnesite	44	. .	113
Lime .	5.907		9,761
Flint	33		242
Silver in gold bullion (ozs.) .	76,837	....	9,490

ACCIDENTS.

During the month 271 accidents occurred in the mines throughout the Union, as a result of which 2 white and 59 coloured workers were killed, and 32 white and 221 coloured workers injured.

Frank Smith Diamonds.

The results at this company's mine for the month of November were as follows:—42,176 loads washed, yielding 1,632 carats.

Prospecting on Krugersdorp Town Lands.

At a meeting of the Krugersdorp Council in committee, held on the 23rd October, the matter of prospecting on town lands was discussed, and it was agreed to invite applications for the right to prospect on certain conditions. The General Purposes Committee reported that applications had been received from the York G.M. Syndicate, Ltd., and Mr. F. E. Coe. They recommended the acceptance of the former application, and this was adopted.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Gaiety Company	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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The Week's Company Meetings.

CONS. MAIN REEF.

Satisfactory Results.

In the board-room, Cullinan Bldgs., on Nov. 28, the annual meeting took place of the Consolidated Main Reef Mines and Estate Company, Ltd. Mr. W. H. Dawe presided, and present were Messrs. A. A. Auret, J. H. Ryan, E. J. Renaud, C. Dreyfus, M. Honnet, A. G. Gill, J. Jourdan, G. C. Fitzpatrick, R. Goldmann, Matthews, Manisty, Setchell, Hermansonn, and H. G. L. Panchaud, secretary.

Chairman's Speech.

In moving the adoption of the report, the chairman said: I have pleasure in drawing your attention to the satisfactory results obtained during the year ended the 30th of June. One of the chief features was the cutting of the reef in the vertical shaft, in January last, at a depth of 2,365 feet, near the horizon of the 23rd level, and the excellent results obtained from the 110 feet sampled round the shaft, viz., 17·5 dwts. over an assumed stoping width of 48 inches. Your consulting engineer points out that this shaft is situate on practically the central line of the property, and though he cautions us not to take this result as typical of the reef values in this section, he considers it very satisfactory—in other words we may regard it as a good indication. The work of sinking the shaft to the 25th level was continued without interruption—the development work on the 23rd level being postponed for the time. The shaft sinking was completed soon after the close of the financial year, and stations on the 21st, 22nd, 23rd, 24th and 25th levels have been cut, and crosscuts to the reef are being proceeded with, on the 21st, 22nd and 24th levels. Work on the 23rd and 25th has been temporarily suspended, as we have, at the present moment, only about 50 per cent. of our complement of underground native labour. On the 22nd and 24th levels there remains only about 100 feet of crosscutting to be done in order to reach the Main Reef Leader. The connection with the workings from the west shaft has been made from the 20th level, which naturally has had the effect of greatly improving the ventilation of the lower workings of the western section. I would point out that the policy in regard to the sinking of this shaft has been somewhat altered. as, instead of carrying it down to the 29th level, as originally intended, it has been stopped at a suitable distance below the 25th loading station.

West Incline Shaft.

The west incline shaft has been sunk a total depth of 3,845 feet—that is, 155 feet below the 21st level, and an auxiliary hoist is being installed on this level preparatory to restarting sinking. The distance between the west shaft and central shaft is 2,400 feet, and the following table shows the progress made with the various drives from the west shaft towards the centre of the property, viz.:

16th	covers 2,350 feet.
17th	covers 1,650 feet.
18th	covers 1,700 feet.
19th	covers 1,650 feet.

You will notice that the 16th level is within 50 feet of the line of the central shaft, while the 17th, 18th and 19th each have approximately 700 feet to go, and as the values on these levels continue to be good, you will gather that the satisfactory development has been carried beyond the western section well into an area —the central section—the value of which, judging from the upper levels from the old central shaft, previously appeared to be doubtful.

In regard to the eastern section, comparatively little work was done, as the development continued to give unsatisfactory results, and no further sinking of the east incline shaft was done, as it is intended to develop the area below the point which the shaft has reached by drives from the vertical shaft.

Payable Ore.

During the year the payable ore developed and exposed amounted to 185,050 tons, having a value of 7·2 dwts. over a stoping width of 48 inches. That this amount was not greater is accounted for by the fact that so much shaft sinking and crosscutting to the reef had to be accomplished. From the information submitted to you, you will see that extremely good progress was made with this work, and consequently the mine will be in a favourable position for opening up reserves on the lower levels during the current year. Though the payable tonnage developed during the year was only 185,050 tons, as against 307,814 tons mined, the payable ore reserves at the end of the year show a slight increase on the reserves of the previous year, which result is due to the fact that a considerable quantity of ore was obtained from reclamation work, and from blocks which were not previously included in the payable ore reserves. The ore reserves at the 30th of June last stood at 614,470 tons, of an average value of 7·3 dwts. over 48 inches, as against 610,680 tons, of an average value of 7·2 dwts., at the end of the previous financial year. At the last annual meeting I referred to the gradual reduction of the ore reserves in the eastern section, and thought it probable that the tonnage being milled was likely to be reduced temporarily about March last. You will have noticed, however, that the profits from March to the end of the financial year showed comparatively little variation; and the total profit for the twelve months amounted to £139,415, as against £94,134 for the previous year—in fact, comparing the figures for the last financial year with those of the previous year we get an entirely satisfactory result; the tonnage milled was 23,639 tons higher; the yield per ton milled shows an increase of 1s. 8·4d.; while there was a decrease in the costs of just over 1s. per ton, and an increase in the profit per ton milled of 2s 8·5d.

Financial Asaect.

Referring to the financial statements, including the balance of £22,806 brought forward from the previous year, the credit side of the appropriation account shows a total of £175,025, while the debits against the account, including two dividends of 5 per cent. each, amount to £116,365, leaving a credit balance of £58,659 to be carried forward. The dividends Nos. 9 and 10, declared on the 31st of December and 30th of June last, you will be asked to confirm. After allowing for the capital expenditure chargeable against the cash provided in 1909, the available balance from this source, at the 30th of June, was £87,854. Reference is made in both the consulting engineer's and general manager's reports to the improved health conditions in your mine. The connection from the 20th level of the west shaft with the vertical shaft naturally results in much better ventilation, but in addition to this considerable expenditure was incurred in installing an efficient water service throughout the mine. In the past, efforts in this direction were handicapped by want of connection between the shafts, but I am glad to say that, that difficulty having disappeared, the mine is now in a most satisfactory state in this respect. At this date it is unnecessary, and in fact it would serve no good purpose, to refer at any length to the disturbances which occurred on the Rand early in July last. No doubt, during the intervening period, all concerned have given them the most careful thought, with the view of forming an opinion regarding the causes of the troubles, arriving at a conclusion as to whether the dissatisfaction which existed was justified, and if so the best means of removing such causes of dissatisfaction in the future. I think you will agree with me that in the organisation and working of a huge industry, such as we have here, it is almost impossible that causes for complaint should not arise, but I am strongly of opinion that in the majority of cases real or fancied grievances would be quickly and satisfactorily settled by a discussion of the point at issue between employers and employed. I have always held—and I think not unreasonably—that the directors of the gold mining companies of the Rand have taken a sympathetic interest in the welfare of the mine employees, and I hope that this interest will not be in any way influenced by past occurrences, and trust that the recognition of the Transvaal Miners' Association by the mining groups will result in a reasonable exchange of views, which will lead to a satisfactory settlement, where differences are thought to exist. In conclusion, I wish to refer to the resignation of Mr. S. C. Thomson, who has been for many years your consulting engineer. Mr. Thomson's resignation was due to the fact that it is his intention to leave this country during the next few months, and I wish to express the appreciation of your directors of the services he has rendered to the company. Mr. D. Wilkinson was appointed to fill the vacancy thus created, and in this connection I might mention that Mr. Wilkinson has been associated with the companies of the Neumann group since 1903, and consequently has a wide experience of the Rand, and a thorough knowledge of the conditions existing here.

The report and statement of accounts were formally adopted.

The number of shares represented at the meeting was 227,594.

MAIN REEF WEST.

Decrease in Native Labour.

Health Conditions Improved.

Mr. W. H. Dawe occupied the chair at the annual meeting of the Main Reef West, Ltd., on Nov. 28 at Cullinan Building. Others present included Messrs. C. Dreyfus, Setchell, Manisty, Baxter, Honnet, R. Goldmann, Jourdan, J. Munro, P. Richardson, Hermansonn, Fitzpatrick, and H. G. L. Panchaud, the secretary.

The number of shares represented personally and by proxy was 229,108.

Chairman's Remarks.

In moving the adoption of the report, Mr. Dawe said: I wish briefly to review the results of operations for the past financial year, and in doing so would like, in the first place, to refer to the remarks made at the last annual meeting, in connection with the sinking of the west shaft. I then pointed out that this work formed one of the most important features in the scheme of development, and that the completion of the sinking of this shaft would materially assist the development of the western section of the property, with the result that the ore reserves should be rapidly increased. These remarks dealt with what is really the crux of the whole position. The sinking of the shaft was completed in December last, and development in the western section has been carried out with all possible energy. But, unfortunately, instead of the ore reserves being materially increased, as it was hoped would have been the case, results have been very disappointing, and the position is summed up by your consulting engineer, when he states, in his report, that facilities for development have been greatest in this section, and here the results generally have been much below expectations, for practically the whole of the western development has been low grade, and a large percentage unpayable. I have dealt with this feature first, as it has so important a bearing on the whole situation, in so far that instead of having increased ore reserves at the end of the financial year they show a decrease of 93,800 tons, and a fall in the average grade of ·34 dwt., as compared with June, 1912—that is on the 30th June last the payable ore reserves stood at 591,830 tons, having an average assay value of 6·02 dwts. over an assumed stoping width of 55·4 inches. The payable ore developed and exposed during the year amounted to 168,540 tons, of an average value of 5·8 dwts. over a stoping width of 52·2 inches.

Subsidiary Incline Sunk.

The disappointing results met with in the west section of the property necessitated the opening up of lower levels as rapidly as possible. Since the 30th June the crosscut to the 13th level has been completed, and a subsidiary incline was sunk from the 11th to the 12th level. Very little driving has been done yet on the 12th and 13th levels from these points, viz., 30 feet on the first mentioned, where the values were unpayable, and 15 feet on the 13th, which gave 5·6 dwts. over 48 inches. On the 11th level west from the west shaft the average of the values for 490 feet driven are 5¼9 dwts. over 48 inches. As mentioned in the consulting engineer's report, 150 feet of this total of 490 feet gave 8·1 dwts. over 48 inches. This indicates that though the values on this drive have varied considerably, yet the average over practically 500 feet on what might be described as the pioneer drive in this area, is payable, though not high. Taking into consideration the fact that only a small footage has yet been driven on these lower levels, we hope that a continuation of the driving will put a more favourable complexion on the western area of the property.

In the eastern section the east incline shaft has been sunk below the 13th level, but a considerable delay in opening up the reef in this section is occasional by a fault near the shaft, which necessitates about 180 feet of crosscutting to the foot wall on each level before the Main Reef Leader is intersected. Your consulting engineer points out that the development in the eastern section had, up to the date of his report, viz., the 25th of August last, shown a large percentage of payable reef. The reef has since been intersected on the 12th level, but so far the assay values obtained have been disappointing. It is not necessary for me to give the details of the footage driven during the year, or the amount of shaft sinking accomplished, as these points are dealt with fully in the general manager's report, but a study of these figures will be sufficient to show you that the work has been carried on most energetically, and sufficient development accomplished to have materially strengthened the company's position, as we hoped, were it not for the fact that the bulk of the work done in the western section was in such a poor zone.

On the South Reef.

From the general manager's report you will have noted that a comparatively small amount of work was done on the South Reef, viz., 591 feet, but of this only 78 feet, or 13·2 per cent., gave payable results. That the footage driven on the South Reef was not greater was not due to any want of interest or desire to exploit this reef, but was owing to the fact that it was impossible to spare more labour for its accomplishment. At the present time crosscuts to this reef are being put in on the 3rd and 4th levels. In common with a number of other mines, your company has suffered from a decrease in its labour supply since July last. Without labouring this point, it is sufficient to state that on the 20th instant the company had barely 50 per cent. of its underground complement of native labour. I hope that with the near approach of the better season for recruiting the number of native labourers will be rapidly increased. Turning to the milling results, we find that the tonnage milled during the past financial year showed an increase of 46,207 tons, but the value of the yield per ton showed a decrease of 3s., and the costs were 4·7d. higher, which is accounted for by the higher charges for mining and development, the former being due to the necessity of undertaking a large amount of subsidiary development in the form of raises and winzes, to allow of the mining of many small blocks of ore which were isolated from the larger blocks by faults. The total profit for the year was £90,522, a decrease of £13,718 on the profit of the previous year. Referring to the appropriation account, including the balance of £13,785 brought forward from the previous year, the credit side of the account shows a total of £108,200, whilst the debits against the account, including the one dividend of 5 per cent., amount to £88,939, leaving a credit balance of £19,261 to be carried forward. The largest items in the above debits are those of £18,750, being the proportion of the provision for redemption of debentures from 1st October, 1912, to 30th June, 1913, and £17,625 for debenture interest. In connection with the redemption of debentures, on the 1st October last your directors purchased the amount of £25,000 at an average price of 92 per cent., thus effecting a considerable saving to the company. The purchase was made through a leading firm of London brokers. It will be noticed that an amount of £6,172, development suspense account, was written off during the year, as on account of the disappointing developments for the past year it was not considered justifiable to retain this item in the balance sheet. On the 31st of December last dividend No. 7 of 5 per cent. was declared, and this you will be asked to confirm. I need hardly say that it was with regret that your directors were obliged to pass the dividend on the 30th of June last, but in view of the general position, and the fact that we have to provide for the redemption of debentures and interest on the same, no other course was possible.

Financial Details.

In connection with the expenditure on capital account, the total for the financial year was £43,649, of which £12,219 was on account of machinery, and £29,430 on account of shaft sinking. Of the latter amount £7,569 was charged against this year's profit, as it represented the cost of sinking the east shaft, which comes under the head of current work. Deducting this amount of £7,569 from the total of £43,649, we obtain a balance of £36,080, which was provided for out of the funds raised by the debenture issue. The balance of cash available from this source, on the 30th of June last, was £5,377. I am pleased to be able to state that the difficulties in regard to the ventilation of the mine which existed while we had only one shaft to work through have now disappeared. An efficient water service has been installed, for the purpose of laying the dust, and your consulting engineer and general manager both express the opinion that the general health conditions have been much improved. As mentioned in the directors' report, Mr. S. C. Thomson, who was your company's consulting engineer from the time active operations started, resigned his position, as he is leaving the country early next year, and I would take this opportunity of expressing your directors' appreciation of the services he has rendered to your company. Mr. D. Wilkinson, who was appointed in place of Mr. Thomson, has been closely associated with the Rand since 1903, and has a wide experience of the existing conditions.

There was no discussion, and the report was unanimously adopted.

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Notes and News.

The Barnato Group's Leading Mine.

The Van Ryn Deep Company achieved a further record last month by crushing 34,250 tons of ore for a revenue of £57,728 and a gross profit of £25,831. This means that the company, which only commenced crushing operations in July last, has become the leading profit-earner of the Johannesburg Consolidated Investment group; a somewhat remarkable performance, when it is realised that to attain to this position the profits earned by such consistent and established dividend earners as the Consolidated Langlaagte, New Primrose and Witwatersrand have had to be eclipsed. But the Van Ryn Deep has easily achieved this, and the latest reports from the mine indicate that the excellent profit declared in respect of last month's operations is likely to be excelled in the near future.

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Important Appointment.

His many friend on the Rand will be glad to hear that Mr. H. J. S. Heather, formerly of the Corner House staff, and the author of some well-known works on electricity, has been appointed Professor of Electrotechnics at the S.A. School of Mines.

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A New Rhodesian Producer.

The Antelope Gold Mine, situated in the West Gwanda district of Matabeleland, reached the crushing stage a week or two ago, and at the time of writing the full equipment of 4,000 tons per month capacity should be at work. The mine has been developed on a fairly ambitious scale, and it was calculated that about 140,000 tons of ore were blocked out some considerable time ago. The average value of the ore exposed is given at 42s. per ton, and there should accordingly be ability to earn substantial profits from the venture.

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Labour Scarcity in the Barberton District.

The outlying mining districts of the Transvaal as well as the Rand are feeling the pinch of native labour shortage severely at present. Barberton properties generally are greatly in need of additions to their native labour complements and most of the De Kaap mines have during the past month or two been compelled to curtail operations considerably, not only in so far as production is concerned but in development as well. The shortage in the Barberton field is attributable to several causes chief among which are the labour requirements of the railway construction work still in progress on the Nelspruit-Sabie line on the continuation to Graskop and the plentiful early rains with the consequent opportunity for ploughing for the next crops.

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Christmas Arrangements.

The fact that Christmas Day falls this year on a Thursday necessitates a change in our publishing arrangements. Next week the paper will appear as usual on Saturday, the 20th inst., but the issue of the following week will be published on Wednesday, the 24th inst. The next issue thereafter will come out on Saturday, January 3rd, 1914.

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Asbestos in South Africa.

Considerable interest is again being taken in the asbestos deposits of the Transvaal and Rhodesia, and it is interesting to note that both in the Umswezwe district of Mashonaland and the Carolina area of the Transvaal much activity prevails on the asbestos fields. It may be remembered that about four years ago the Carolina Asbestos Company suspended all operations on the farm Diepegezicht, operations having proved unprofitable. Just recently, however, certain British asbestos merchants have entered into an agreement for working the property on a tributing basis, and it is expected that work will be resumed early next month. As to the Umswezwe discoveries considerable excitement prevails in Gatooma regarding them, and it is understood that material of good fibre and quality has been opened up.

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South African Coal for New Zealand.

From time to time it is worth while inquiring into the statistics of coal production in the Transvaal and in the Union, if only to arrive at a proper appreciation of the importance of this branch of the mineral industry. It is also of interest to note the value per ton of production from different collieries in the different Provinces and coal-mining districts. It is noticeable, in the first place, that the coal output of the Union has been on the increase for the past three months or so. Thus in August there were sold by all the mines of the Union 720,228 tons. The September output was 733,081 tons, and that of October 746,608 tons. The Transvaal's production has increased in very much the same ratio, and is in fact responsible for the increase. In August the production was 420,484 tons, in September 429,142 tons, and in October 443,360 tons. This material growth in production is, we understand, in no small measure due to expansion of the export trade of the country. We learn that Transvaal coal is now being despatched to New Zealand, and the fact that the Coalowners' Association find it profitable to send coal to a place as far distant as the Britain of the South, points to the very great scope and possibilities of the South African coal export trade when more liberal railage and shipping facilities are provided.

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U.S. Tariff and South Africa.

It is important to note what bearing the reductions of the United States tariff are likely to have upon South African trade. The wool and ostrich feather trades seem those most likely to be affected. The duty upon raw wool imports has been abolished, but most woollen manufactured goods entering the United States will still have to pay duty of something like 35 per cent., which represents a fairly high protective tariff wall. The object seems to be that American manufacturers shall now invade the markets of the world. An importer of woollen goods pointed out, in an interview given to the American "Journal of Commerce," that the English woollen mills have hitherto possessed markets representing 600,000,000 to 700,000,000 persons, whereas the Americans could only count on their own markets, representing a population of 100,000,000, and, moreover, that whereas in a world-wide market fluctuations in demand more or less balance one another, in a market restricted to one country such fluctuations immediately affect the manufacturing industry. He predicted that "if wool remains free of duty for three or four years American woollen goods will be sold in almost every foreign country." If this prediction is realised it would seem natural to expect a rise in the price of the raw material, from which South Arica as a wool-growing country should benefit. On the other hand, the South African ostrich feather trade receives an unmistakable blow. Though ostrich feathers are specially exempted from the clause prohibiting the importation of the plumage of wild birds, the duty on them is raised from 20 per cent. to 60 per cent. ad valorem, which will probably give a fresh impetus to the ostrich-farming industry in Arizona and California, and thus encourage a competition which South African ostrich farmers have already been warned to take seriously. It may be noted in this connection that considerable attention is being given to ostrich breeding in Queensland and Western Australia at present, so that competition of a fairly serious nature may arise from the Commonwealth before long.

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"When the Mines Close Down."

At the invitation of the Turffontein and Forest Hill Ratepayers' Association, Mr. A. E. A. Williamson (a few days ago) delivered an address on Municipal matters. He said he would commence by giving an indication of the difficulties with which they were faced in the Municipal government of Johannesburg—difficulties that were often little appreciated. In 1902 they had a Municipal area of only 6¼ square miles. Now they had an area of 81¾ square miles. Within that area they had no less than 110 different townships, and some 700 miles of "supposed" streets. In the past, any person could form a township, his only expense being to pay a surveyor, have surveyed the proposed township, and then sell the stands, leaving all the burden of road-making, sanitation, drainage, and so on, to the Municipality. He did not think such a state of affairs existed anywhere else in the world. Enormous burdens had been laid upon the Municipality by the township owners, and even now only a third of the stands they had sold were occupied. The Municipality was, however, fortunate in owning trading concerns, which in most parts of the world were privately owned. He referred to water, lighting, tramways, and markets. He did not know of any town in the world where all of these trading concerns were owned by the Municipality, without any competition. Proceeding, he referred to the enormous amount of work that had been thrown upon Town Councillors by the vast and increasing extent of their Municipal enterprises. In the year 1904-5, the gross revenue of the Municipality from all sources was under £700,000; by the year 1912-13 it had increased to over £1,500,000. Every year since 1904 had shown an increase of revenue, and every year had shown an enormous increase in the obligations and duties of Town Town Councillors. Continuing to refer to the financial position of the town, he said that the interest and redemption on their loans amounted to £360,000 per annum. The total amount of their assessment rate was only £310,000. So that the total of the assessment rate did not provide sufficient money to pay that sum. They had to look to other sources to provide money required for improvements, if they did not wish to increase the assessment rate. If they wanted a loan they would have first to face the question of the life of the mines. This was the first question that would be considered by those to whom they would have to go. When they last borrowed money, in 1904, they borrowed it for a thirty years' period. The mines had lost ten years' life since then, and if they wished to borrow money they would have to do so for a twenty year period. The interest for a thirty year loan was 6 per cent.; for a twenty year loan it would be much more, probably 8 or 9 per cent. They would have to be prepared in the future, year after year, for mine after mine closing down. They had seen in the papers during the past few years the effect upon Krugersdorp and Boksburg of the closing down of the comparatively small York and Cinderella mines. This would give them some indication of what they would have to face as the large mines were worked out and closed down. After dealing with the lack of sympathy with Johannesburg shown by the Union Government, and the unfair burden of taxation placed on the Rand's population by various means, he proceeded to advocate, on the lines of previous speeches, laying the foundations of a great meat industry similar to that of Chicago, which would support their population after the mines had closed down. Chicago was similarly situated to Johannesburg in that each were large inland towns, centres of great stock-growing districts with abundant supplies of maize and feeding. He proposed that Government bonuses should be given to assist any who would initiate a meat-exporting industry, and referred to the enormous strides made in meat and butter export in Australia after the granting of a Government bonus.

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New Heriot.

At a meeting of the London shareholders of the New Heriot Gold Mining Co., Ltd., held in mail week in London, Mr. F. J. Dormer presiding, it was announced that a dividend at the rate of 75 per cent. per annum would be payable to all shareholders registered on the 28th inst. The chairman stated that advices had been received to the effect that the recent flooding of the mine was now being attacked by new pumps, and it was expected that milling would be resumed in three weeks' time. He referred to the life of the mine, and, while guarding himself against making an estimate which was anything more than a rough approximation, said he believed than any shareholder who looked forward to a life of six or seven years would not be far out. The meeting was called for the election of four London directors, and the retiring members of the Board, Messrs. F. J. Dormer, D. J. Pullinger, L. Wagner, and G. H. Raw, were re-elected.

Resuscitation of the Champ d'Or.

News of the acquisition of the Champ d'Or Mine by Messrs. Lewis & Marks has been hailed with satisfaction on the West Rand, since it has been authoritatively stated that work will be very shortly resumed. The closing down of the French Rand mine two or three years ago and the suspension of operations at the Lancaster West during the past few months had, of course, a very detrimental effect on the West Rand, and whilst it is recognised that no large number of employees can be engaged by the resuscitated concern—not at the start at any rate—satisfaction is expressed on all sides at the prospect of there being another active mine on the West Rand during the next month or two. The Champ d'Or Company, it may be remembered, was registered in London early in 1890 under the title of Le Champ d'Or French Gold Mining Company, Ltd. There are 43 reef claims situated to the west of the Grey's Mynpacht and to the east of the French Rand. From 1892 to 1911 there were crushed about 700,000 tons of ore, and the dividends paid amounted to nearly a million and a half sterling on a capital of £135,000. In 1911 the mine was assumed to be worked out and the claims were transferred to a syndicate. Apparently the Champ d'Or provides yet another instance of a mine being found to contain payable ore some considerable time after the claims were assumed to have been exhausted. The future of the concern will certainly be followed with the keenest interest.

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Lace Proprietary Mines, Ltd.

Mr. L. Edwards, presiding last week at the annual meeting of the Lace Proprietary Mines, Ltd., said: "I have to express the Board's regret that they are not yet in a position to inform you that the requisite financial arrangements have been concluded which will enable them to exploit the mining potentialities of your two extensive and valuable freehold East Rand farms, Droogefontein and Vlakfontein. There was reason to hope that during the current year financial conditions generally, and those of South Africa in particular, would have so improved as to induce a flow of capital in the direction of mine exploitation, but the tense demand for money all over the world militated against the fulfilment of that hope, and the events of July last have given the prospects of the acquisition of fresh capital for South African mining ventures a further and most unfortunate setback. It is, however, only a matter of time for proved mining properties such as yours, to receive the recognition and practical aid they deserve. In the interval of enforced waiting, your directors have utilised the surface rights of the properties so efficiently as to enable them to more than cover the year's expenses. Daggafontein shaft will, it is hoped, be on the reef within six months, and I need not tell you what effect a good strike on the Daggafontein shaft would have in relation to our prospects.

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Falcon Mines.

The report of Falcon Mines, Ltd., for the year ended June 30 last states that during the period 110 claims have been pegged, and on that date the property of the company consisted of 400 mining claims, equal to an area of about 619 acres, 330 base metal claims covering Iron Mine Hill, 3,175 acres of land comprising a farm adjacent to the mine, the lease of 500 acres of irrigable land adjoining the mine, and dam and machinery sites in extent about 19 acres. In view of the large ore reserves, development has been curtailed, and the energies of the staff have been concentrated on the erection of reduction works and the preparation of the mine for production by the cutting of stations, box holes, and stope driving. The total footage completed to the date named was 22,785. Compared with last year, the ore reserves have increase 187,134 tons, being on June 30, 817,011 tons, and the value then was £1,977,181, or, on the basis of the present price of copper, £2,380,686. The directors are of opinion that the valuation of the sulphide ore reserves as given in the consulting engineer's report, namely, 53·9s. per ton (copper at 10s. and gold at 4s.), is conservative, and can be relied upon.

TOPICS OF THE WEEK.

THE ATTACK ON SIR LIONEL PHILLIPS.

Consternation and dismay were caused on Thursday by the dastardly attempt on the life of Sir Lionel Phillips, made in broad daylight near his office. The fact that the miscreant who made the attempt was merely a frenzied storekeeper obsessed with a fancied grievance against the mines in no way mitigates this outrage on a leading citizen and on the public conscience or relieves the feelings of profound regret with which the whole community has been stirred. One would have thought that the great services rendered by Sir Lionel Phillips to South Africa, his record of a life spent in advancing its interests, and his high sense of duty and public spirit would have made him immune from the enmity of even the most crack-brained, would-be assassin. But, unfortunately, as has only too often been seen in recent years, these are the very qualities that seem to attract the notoriety-seeking desperado; and the fate of Sir Lionel Phillips is of a piece with that so frequently wreaked by the fanatic and madman on those prominent in any sphere. The latest reports from the hospital at the time of going to press are to the effect that Sir Lionel Phillips is not yet out of danger, but it is some comfort to know that he is in the keeping of South Africa's most able and devoted surgeons, who are leaving nothing undone to mitigate his sufferings. To Lady Phillips and family the sympathy of the whole community goes out in this tragically sudden calamity.

THE PROGRAMME OF INDUSTRIAL LEGISLATION.

It is announced in the *Union Gazette* that Parliament has been prorogued until January 30, and this is taken to mean that it will reassemble on that date. It is generally expected that the session will be devoted in large measure to industrial legislation. One of the first Bills brought forward doubtless will be a Bill for the better preservation of law and order. Both the Prime Minister and Sir David Graaff—before he left the Cabinet—indicated that such a measure was in preparation. Mr. Malan has announced that a Trade Union Bill is in course of preparation, and from statements made during the past few months, it appears that the Bill will aim at the compulsory registration of all trade unions, and that, in granting recognition, it will also impose certain obligations on the registered bodies, such as the enforcement of the ballot before a strike can be declared, and other safeguards against the domination of syndicalist juntos. The Industrial Disputes Prevention Bill has been undergoing a prolonged process of revision in several drafts during the past few months, and it would be idle to speculate, until its terms are published, on the extent to which it is likely to serve its declared purpose. It is to supersede the Transvaal law of the same name, and will, no doubt, embody many amendments, based on the most recent experience. A Factory Bill, which has been circulated confidentially to all parties interested throughout the Union, is now undergoing a final revision; and a Workmen's Compensation Bill, applicable to the whole Union and embodying certain amendments on points in regard to which experience has shown that existing Cape legislation is lacking, has been prepared. Other industrial legislation which may find place during the coming session includes the Workmen's Wages Lien Bill, a Mine Benefits Societies Bill, and possibly a measure amending the Miners' Phthisis Act. Most of these measures will necessarily be long and probably complicated, and if they all pass on to the Statute book during the coming session, Parliament will have cause for congratulation on its energy. The greater portion of the session is thus bound to be occupied with purely industrial legislation and debates.

LORD HARRIS ON THE GOLDFIELDS POSITION.

The full report of the speech delivered by Lord Harris at the annual meeting of the Gold Fields Company, though dealing less largely than usual with the Rand, still possesses great interest for us here. It would appear that the extension of the company's mining interests in Rhodesia has been a drain upon its resources instead of a substantial source of revenue. It would be interesting to know what proportion of the huge depreciation of over £1,400,000 written off by the Gold Fields is due to the decline in value of the company's Rhodesian interests. Lord Harris said that of the total depreciation 95 per cent. was represented by South Africans, but he did not differentiate between Kaffirs and Rhodesians. With regard to the further depreciation, Lord Harris said that the board had made partial provision for what had happened since the end of the last financial year by writing off £200,000. Lord Harris frankly admitted the showing made by the report to be a disappointing one, and although he asserted that the directors were absolutely undismayed as regards the future, he was unable to hold out the prospect of the results for the current financial year providing a cheerful contrast. The income of the company, he said, must largely increase, but he hastened to add: "I do not say this year." He found satisfaction in the improved liquid position as compared with last year, which he described as "excellent." As to Rhodesia, Lord Harris said the directors considered that the Gold Fields having put its hand to the plough should push the furrow through. The Gold Coast he described as the most disappointing mining field they had ever been into, but he subsequently remarked that Nigeria looked as if it might make amends for the Jungle. In connection with the Rand, Lord Harris pointed out that they had had many trials to face, the principal one is the old one—difficulty about labour. It was true that in the course of the year they had actually rather more labour than in the previous year, but for the very deep level mines, such as Simmer Deep and Jupiter, there was nothing like enough labour. He drew attention to Mr. Chaplin's speech at the annual meeting of the Simmer and Jack, on the 26th September last, in which he pointed out that the labour supply was only 61 per cent. of the complement, and a corresponding shortage in Simmer Deep and Jupiter must affect these mines, for they are low-grade propositions, whose success is entirely dependent upon being able to send up a very large tonnage. "You may ask me," continued Lord Harris, "what is going to change all that, and seeing that the Jupiter has had to close down it is a question I cannot complain of. Well, I have here a very encouraging observation from Mr. Webb. We did not include it in the report, because there was already a good deal from him. It is as follows:—'I firmly believe that working costs on the Rand will come down at some time in the future and be reduced to an average which will permit the working of these large low-grade mines at a profit. With the grade falling in depth and the area of low grade ore becoming more and more extensive every year, and considering the absolute importance that this mining industry is to the whole of South Africa, I think the time will come when low costs, and very low ones at that, will be recognised as a factor of national importance to the entire country. I wish very much that that remark may come prominently before the eyes of the Government of South Africa, and that they may take it seriously to heart, for they will be making a grievous blunder if they do not give every possible assistance towards recruiting labour for the mines on the Rand.' But I am sorry to have to draw attention to a recent instance of their indifference. There is a system by which mining companies are allowed to make advances to the boys whom they wish to engage, and it has been customary up to now for the mining companies to advance as much as £5 which the recipient has utilised for the benefit of his family at his own home. The Government have notified that from the 1st January next advances to natives offering themselves for the mines must not exceed £2, but only, and here is the injustice, in the case of mining companies, so that other trades, the agricultural interest for instance, may advance £5, whereas we may only advance £2. It is of course a direct discouragement to the boys to come to the mines, and is of course inequitable.'" Concluding, Lord Harris said:—"I think you ought to see a considerable increase of interest taken in Rhodesian mining in the course of next year, several companies, including the Shamva, will come to the crushing stage, and the output of gold from Rhodesia must very largely increase. Now, gentlemen, we were criticised last year by more than one speaker for having sought investments in other parts of the world and not being satisfied with remaining a South African company. Well, I can say conscientiously that we do not repent of the step we took; we had reasons to anticipate that troublous times were ahead in the Transvaal; we had no desire to leave the Transvaal as a field of investment, but we could not put our hand upon anything that looked very profitable, and we knew that by degrees, slowly but inevitably, our investments there must depreciate in value as the mines began to work out."

TEN MONTHS' TRADE RETURNS.

The October trade returns for the Union are, in view of all the circumstances, better than might have been expected. The exports show a slight falling-off as compared with the corresponding month of last year, but this is more apparent than real, for the export returns for October, 1912, were substantially above the average for the year; the month was one of those in which there were five outward mails, and the weekly consignments of gold and precious stones by the mail steamers bulk very large in the export statistics. The import tables contain one item which does not suggest a pessimistic view of the mining industry. For some time the increase in the importation of mining machinery has been at a much less rapid rate than a few years ago. During the whole of 1912 the imports under this head amounted to only £736,735, as compared with £947,283 in 1911. During the first ten months of the present year mining machinery was imported to a total value of £698,531, as compared with £588,382 during the corresponding period of last year. In the month of October alone the increase amounted to over £40,000, the actual figures being: for October, 1913, £96,382, and for October, 1912, £54,547. There is also a large increase on the month, and a proportionately smaller increase on the year, in the importations of cyanide. In the category of machinery may be noticed, also, continued increases under the various sub-heads which indicate the development of the land. Machinery which is merely described as "agricultural" shows a falling-off, but sawing and water-boring machinery and windmills each show a substantial advance. The figures for the month, as compared with October, 1912 (shown in brackets), are: Sawing machinery, £818 (£396), increase £422; water-boring machinery, £5,073 (£2,298), increase £2,775; windmills, £8,365 (£6,213), increase £2,152. The figures for the ten months ended October 31 are: Sawing machinery, £6,270 (£3,241), increase £3,029; water-boring machinery, £30,512 (£20,101), increase £10,411; windmills, £58,606 (£50,091), increase £8,516. The total imports of "articles of food and drink" for the month are less by nearly £20,000 than during the corresponding month last year, though the total for the twelve months is still a million and a third in excess of that for the same period of 1912. There is a general decline all round in the various items in the category of "articles of food and drink," with a few exceptions. The statistics still reflect the effects of the drought of last year. During the present year, so far, imports of wheat are in excess of the corresponding portion of last year by over half-a-million sterling, and imports of wheaten flour are up by nearly a quarter of a million. A more important feature is the increase in the importation of meats and meat products. Other items in the food imports which call for notice are: a drop of £34,000 in the month, and £50,000 in the ten months, in coffee; a continued increase in the supplies of fish from oversea; and a striking increase in the quantity of sugar required to supplement local production. In October the imports of sugar amounted to £43,947, as against £24,135 in October, 1912, and in the ten months £240,509, as against £163,263. The returns, it will therefore be seen, present on the whole many satisfactory features.

RAND ORE VALUES IN DEPTH.

A Consideration of a Subject of National Importance—Revival of the Deterioration Belief by Mr. Webb.

I.—THE GEOLOGICAL ASPECT.

In the absence of any remarkable developments along the Main Reef series it may certainly be stated with reason that the most important technical and economic aspect of the moment is the revival of the old, old question of the value of the banket beds in depth by Mr. H. H. Webb, Consulting Engineer of the Consolidated Gold Fields of South Africa, who in his report for the year ended with June last admits that, in so far as the mines of his group are concerned, the average value of the ore developed over large areas has been getting lower as greater depth is attained. In our last issue we devoted a leading article to a consideration of the matter in so far as its broader aspect—its bearing on the whole Reef—is concerned. In the same article we referred to the opinions evoked by Mr. C. O. Schmitt's paper, read before the Institution of Mining and Metallurgy in London a couple of years ago.

The Two Schools of Thought.

Apparently there is now a strong body of engineers who incline to the view that as greater depth is reached less gold occurs. Amongst the latest and most authoritative recruits to the ranks of those who incline to the more pessimistic view are Mr. H. H. Webb and Mr. H. S. Denny. On the other hand there are equally experienced and reputable mining engineers who say that there is no material evidence of any kind to support the view that a greater depth of working means poorer ore. It may be remembered that in the discussion resulting from Mr. Schmitt's contribution to the Institution, the chief consulting engineer of the Central Mining and Investment Corporation—the premier Mining House of South Africa—gave an authoritative denial of the validity of evidence as to decreasing value, and Mr. S. J. Truscott, who needs no introduction to the mining world, whole-heartedly supported Mr. Marriott's views.

Mr. Truscott's Criticism.

It is not our intention to recover the ground, but at least one piece of criticism by Mr. Truscott seems to call for mention at this stage. Mr. Truscott remarked that Mr. Schmitt, on the first page of his paper, gave a statement from which one would gather that the grade was a factor of depth. It was true that he somewhat qualified this in a footnote, but since, however, it was repeated again several times in the body of the paper the ordinary person, after reading it would certainly point to this paper as evidence of the unqualified decrease of value of the banket in depth. The author, in spite of the above-mentioned footnote, regarded depth and value as being so interdependent that he was able to find the average depth of the workings at a particular date by ascertaining the grade of ore at that date! Mr. Webb's statement, contained in the Gold Fields annual report must not, of course, be regarded in the same light as the fantastic curves of deterioration advanced by Mr. Schmitt. Mr. Webb is technical chief of a corporation owning very large stretches of deep level claims on the Witwatersrand, and in so far as that corporation is concerned the accuracy of Mr. Webb's view as to banket values in depth cannot for a moment be doubted. But does this opinion hold good for all the mines of the Witwatersrand as well as for all subsidiaries of the Consolidated Gold Fields group? It is just here that one comes face to face with the fact that different engineers hold to widely opposite views. Mr. Webb's experience is that the grade declines with depth. Mr. Marriott, who is the technical head of a group producing over 37 per cent. of the output of the whole field, holds that there is no material evidence of deterioration as greater depths are reached. When experts differ where is the ordinary student to search for truth?

Origin of the Gold.

There is, as we remarked a fortnight ago, a similar marked divergence of opinion amongst leading mining engineers and geologists as to the origin of the gold in the conglomerate beds and the conditions under which the banket received its auriferous content. Were the origin of the gold more properly understood there would no doubt be greater unanimity of opinion as to whether the banket beds are or are not becoming poorer in depth. The question is fraught with the very greatest importance to the Transvaal. The oft-repeated assertion that there *is* deterioration as shafts become deeper cannot but fail to have an adverse influence on the Rand, and therefore on the whole of South Africa. The words " impoverishment in depth " have a nasty sound for the investor's ear, and they are certainly not calculated to attract capital, of which this country has such dire need. The matter is, in fact, one of national importance, and we therefore submit that it is a matter of national urgency that some method of independent and capable investigation into the problem should be initiated. Apparently it is no good taking different mines or different sections of the Witwatersrand. Those who declare that the value is falling demand some more thorough basis of enquiry than that, and since much of the outcrop section has been worked out it will be impossible to ascertain by exhaustive sampling at regular five feet intervals (as has been tentatively suggested by one of the leading contributors to the discussion) how values at outcrop, at 500 feet, at 1,000 feet, and so on compare with one another over the whole Witwatersrand. Obviously the most thorough, and at the same time the most scientific, method and the method likely to give the most truthful data is to get right to the *fons et origo* of the whole matter and to institute the most searching investigations into the question of the origin of the gold in the banket beds.

The Geological Aspect.

It is to be doubted if anything approaching finality in this matter would be reached, but at the same time the data elicited should be of great value and should bear particularly on the matter under discussion. The Geological Survey has already achieved most valuable work in the Transvaal, but we unhesitatingly say that the labours of that most valuable institution could be more profitably employed on the Witwatersrand than in remote outlying districts of comparatively little economic importance. There is still a vast amount to be learned regarding the Witwatersrand despite all the development and scientific investigation that has been accorded it. The geological aspect, although some decry careful investigation along strictly scientific lines as being unlikely to produce data of practical value, is undoubtedly of first-rate importance for a more or less proper understanding of the conditions under which the gold was deposited might well lead to a settlement of the problems relative to values at depth. Some geologists contend that the gold was in the banket beds before they were raised or tilted up. In other words, in their opinion the Main Reef series was at one time a large and rich alluvial field. Subsequently the conglomerate beds were tilted up by pressure from below and were brought into their present position. Now, were such the case, the primary gold in the conglomerate beds could have no relation to depth. After the uplifting and tilting of the beds there would be scope and occasion for the influence of percolating waters and atmospheric agency to produce secondary enrichment in the first few hundred feet. But below that depth it is difficult to conceive conditions which would justify the statement that there was depreciation of value in depth. There are, on the contrary, cases of pronounced opposite tendency, cases to which we propose devoting some consideration in subsequent articles. For the time being the probable value of geological research may be insisted on. Investigation would at the least bear most interesting results. It might of itself and without further investigation completely justify the attitude of the seemingly diminishing numbers of the optimists who claim that the argument of deterioration has nothing tangible or scientific to support it.

THE YEAR'S DIVIDENDS.

Declarations for Rand Gold Mines Received up to the Time of Going to Press.

HEREUNDER we give a table setting forth the dividends declared by Rand gold mining companies for the current year. In regard to declarations for the last six months of 1913 there are stated the returns available up to the time of going to press.

Company.	Issued Capital.	Date per Declaration.	Rate of cent.	Rate per Share.	Amount.	Total Distribution for Year.	Amount Half Year, June, 1912.	Amount Half Year, Dec., 1912.
THE RAND.								
CENTRAL MINING AND INVESTMENT CORPORATION.								
Bantjes Consolidated ...	£502,306	June	5	1s.	£25,115	£25,115	£25,115	£31,369
City Deep	1,250,000	June	10	2s.	125,000	125,000	—	156,250
Crown Mines	940,106	June	55	5s. 6d.A	517,058	517,058	517,058	517,058
Durban Roodepoort Deep..	440,000	June	5	1s.	22,000	22,000	22,000	22,000
Ferreira Deep	980,000	March	25	5s.	245,000	245,000	182,000	220,500
Geldenhuis Deep	585,753	June	10	2s.	58,575	58,575	58,575	29,287
New Modder	1,400,000	June	15	12s.B	210,000	210,000	175,000	210,000
Nourse Mines	827,821	Jan.	10	2s.	82,782	151,767	82,782	41,391
	827,821	June	10	2s.C	68,985			
Modderfontein B.	700,000	June	20	4s.	140,000	140,000	—	140,000
Robinson	2,750,000	June	8	8s.D	220,000	220,000	343,750	275,000
Rose Deep	700,000	June	25	5s.	175,000	175,000	157,500	157,500
Village Main Reef	472,000	June	35	7s.	165,200	330,400	165,200	165,200
	472,000	Dec.	35	7s.	165,200			
Village Deep	1,060,671	June	10	2s.	106,067	106,067	79,550	106,067
COMPANIES WITH HEAD OFFICES IN NATAL, MANAGED BY THE CENTRAL MINING AND INVESTMENT CORPORATION.								
City and Suburban	1,360,000	June	7½	6s.B	102,000	204,000	102,000	102,000
	1,360,000	Dec.	7½	6s.	102,000			
New Heriot	115,000	May	35	7s.	40,250	80,500	46,000	46,000
	115,000	Nov.	35	7s.	40,250			
CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA.								
Knights Deep	643,526	June	12½	2s. 6d.	80,441	80,441	80,441	64,352
Simmer and Jack	3,000,000	June	7½	1s. 6d.	225,000	225,000	225,000	225,000
Robinson Deep	1,000,000	June	12½	2s. 6d.	125,000	150,000	150,000	125,000
	1,000,000	June	2½	6d.E	25,000E			
EAST RAND PROPRIETARY ...	2,445,897	Aug.	12½	2s. 6d.	305,736	305,736	305,736	305,736
CONSOLIDATED MINES SELECTION.								
Brakpan Mines	750,000	June	20	4s.	150,000	150,000	112,500	187,500
JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY.								
Ginsberg	210,000	June	17½	3s. 6d.	36,750	36,750	31,500	36,750
New Primrose	325,000	June	30	6s.	97,500	97,500	81,250	97,500
New Unified	250,000	June	10	2s.	25,000	25,000	25,000	25,000
Witwatersrand	469,625	June	17½	3s. 6d.	117,406	117,406	74,375	74,375
GENERAL MINING AND FINANCE CORPORATION.								
Meyer and Charlton ...	200,000	June	30	6s.	60,000	60,000	50,000	F70,000
Van Ryn	500,000	June	25	5s.	125,000	125,000	112,500	112,500
S. NEUMANN AND COMPANY.								
Consolidated Main Reef ...	924,364	June	5	1s.	46,218	92,436	46,218	46,218
	924,364	Dec.	5	1s.	46,218			
Wit. Deep	550,000	June	15	3s.	82,500	192,500	68,750	68,750
	550,000	Dec.	20	4s.	110,000			
Wolhuter	860,000	April	6¼	1s. 3d.	53,750	86,250	75,250	75,250
	860,000	Nov.	3¾	9d.	32,500			
ROBINSON GROUP.								
Randfontein Central ...	4,193,700	June	7½	1s. 6d.	314,527	314,527	—	209,685
Langlaagte Estate	886,500	June	7½	1s. 6d.	66,487	66,487	43,475	86,950
A. GOERZ AND COMPANY.								
May Consolidated	288,750	June	5	1s.	14,438	14,438	43,312	28,875
INDEPENDENT COMPANIES.								
Durban Roodepoort	125,000	June	10	2s.	12,500	31,250	12,500	18,750
	125,000	Nov.	15	3s.	18,750			
Jumpers	100,000	April	5	1s.	5,000	5,000	5,000	5,000
OUTSIDE DISTRICTS.								
NIGEL DISTRICT.								
Nigel	223,106	June	5	1s.	11,155	11,155	11,155	11,155
Sub Nigel	431,580	June	2½	6d.	10,789	10,789	—	21,579
BARBERTON DISTRICT.								
Sheba	269,738	Feb.	5	1s.	13,487	33,718	13,487	26,973
	269,738	June	7½	1s. 6d.	20,231			
LYDENBURG DISTRICT.								
Ceylon Lydenburg	22,600	June	22½	4s. 6d.	5,085	5,085	—	6,215
Glynn's Lydenburg	170,000	Jan.	10	2s.	17,000	17,000	17,000	25,500
Transvaal G.M. Estates...	604,225	Mar.	20	4s.	120,845	120,845	75,528	105,739

A Per 10s. share. B Per £4 share. C For five months ending June. D Per £5 share. E Bonus. F Including £20,000 bonus.

THE MANAGER AND STAFF OF THE MODDERFONTEIN DEEP LEVELS, LTD.

Bottom row.—W. Luke, jun. (Stores Junior), I. Klipper (Sampler).

First row.—G. Kope (Surveyor), A. A. Coaton (Mine Captain), V. Rosewarne (Resident Engineer), H. R. Hill (Manager), W. H. Balfour (Mine Secretary), Dr. A. W. Goldsmith (Medical Officer), R. J. Judd (Compound Manager).

Second row. J. Singleton (Shift Boss), B. T. Gerry (Shift Boss), J. C. Mill (Foreman Fitter), W. A. Craighead (White Timekeeper), M. Reismann (Foreman Electrician), H. Fisher (Storekeeper)

Third row (top). C. de Marillac (Assayer), J. J. Cotzee (Shift Boss), W. Jenkin (Foreman Carpenter), W. Luke (Foreman Blacksmith), W. G. Penny (Native Timekeeper)

R. Olliver, Photo, 98 Pritchard Street.

GOLD IN THE BANKET.*

Theories of Origin Discussed— Influence of Slate and Shale.

[By C. B. Horwood.]

The descriptions of the occurrences of pyrite pebbles at the Crown Reef, Rietfontein and Randfontein mines clearly showed that they were closely related to dike intrusion and rich ore; and to the retaining influence, in the case of the first, of a thin underlying impervious band of shale; and, at Rietfontein, of a shaly talcose foot-wall. At Randfontein the foot-wall of the Leader is usually sericitic and shaly, and has doubtless exerted a similar influence. Van Hise has strongly emphasized the profound influence of impervious strata upon the deposition of ore. The foregoing merely illustrate local examples of the effect of thin bands of shale; or, even of sericitization along a foot-wall. The retaining influence of shale has, however, a wide and important bearing throughout the whole of the Rand goldfield, which extends for more than 60 miles along the strike of the conglomerate beds. As long ago as 1905, the writer pointed out that, if the theory that the gold originated from ascending mineralizing solutions be accepted, it is easy to understand how solutions may have come up along lines of weakness such as the junction-planes between dikes and their walls, and that during their ascent a point would be reached where it would be easier for them to spread out laterally along the bedding than to ascend farther in a more vertical direction. Further, that as this position would be determined by the porosity of the beds, depending largely on the compression caused by the superincumbent weight of strata, the solutions would naturally select a conglomerate bed. The first of these, with the exception of a few in the Lower Witwatersrand formation, included perhaps the Du Preez series, would be the Main Reef series; and, the impervious foot-wall slate, which lies at their base, would doubtless have exerted a favourable influence by helping to retain the mineralizing solutions above it. He also, at the same time, stated that the under-lying conglomerates, which do not contain sufficient gold to be exploited, did not afford such easy channels, being composed of smaller pebbles, and being more compact owing to a greater weight of over-lying strata; further, that traces of gold could be found in every series and in much of the intervening quartzites, showing that the whole of the Witwatersrand beds had been, to some extent, permeated by mineralizing solutions; but, that the main circulation was doubtless confined to certain channels such as those suggested. George G. Holmes, manager of the New Goch Mine, speaking in a general way to the writer in the early part of 1912, also expressed the opinion that the good average grade of the Main and South Reef sub-series of conglomerates throughout the Rand was due to the retaining influence of the big mass of slates several hundred feet thick under the former, or lower, of these two sub-series. It has been seen that the writer entirely agrees with this opinion. The conglomerates below these broad belts of slate are at a much lower geological horizon and are, therefore, as just stated, more compact; they are also smaller and less defined; and, thus formed less suitable courses for the ascending solutions.

On the other hand, above the Main Reef footwall slates, the mineralizers were in a higher geological horizon, where the strata were less compact, and they encountered a series of coarse conglomerates along which they could easily flow. In addition to their lateral motion they would also have had a downward component due to gravity, which would be checked as the neighbourhood of the footwall slates was reached; thus the greater proportion of their gold contents would have been precipitated in that series of conglomerates nearest the basal slates; in this latter series along the central portion of the Rand, the thin Main Reef Leader is immediately underlain by a thin impervious band of shale, only a few inches thick, by which it is separated from the poor underlying Main Reef. The good average grade of the Main Reef Leader, especially along the Central Rand, compared to the much more erratic yield of the South Reef Leader, is doubtless due to the retaining influence of this thin shale band. Beyond this area, where the thin shale band underlying the Main Reef Leader is sometimes missing, and the Main Reef Leader also is sometimes either missing or poorly developed, the Main Reef itself often rests immediately on a talcose foot-wall, or on the underlying foot-wall slate. This is so on the Far East Rand, where the Main Reef is locally known as the Van Ryn Reef, and in such cases it is the gold-carrier or "pay-reef" of the district. The fact that the average grade of the Main Reef series is more uniform than that of the South Reef series is doubtless due to it being nearer than the latter to the foot-wall slates below the Main Reef. It is certainly a remarkable fact, otherwise difficult to explain, that, speaking generally for the whole Rand, the yield of the South Reef Leader, which is not immediately underlain by shale, is far less reliable than that of the Main Reef Leader, which usually lies some 60 to 120 feet or more below it. In the absence of modifying conditions such as the presence of a shaly, talcose, or sericitic foot-wall, the tendency can frequently be observed for the gold to be spread over several bands of conglomerate (which are often thin and separated by barren quartzite) in such a way that the total gold contents cannot be mined within a sufficiently narrow stope-width to extract it profitably. On the other hand, when one of the ancient channels of circulation has been restricted owing, say, to a reduction in the thickness of the banket, or, for a short distance, to entire absence of pebbles, the gold is frequently concentrated in this narrowed area; and, in the latter case often into a line of visible gold along the contact of both walls.

The result of the retaining influence of slate and shale is thus of great economic importance. It is not merely that the more uniform yield of gold from the Main Reef sub-series, as compared with that from the South Reef sub-series, has affected actual mining operations, but that except for the retaining influence of slates and shales it might have been that the gold of the Rand was not sufficiently concentrated in any particular series of conglomerates to pay for extraction; in which case the £347,000,000 worth of gold already won, would have remained in the ground; and the gold still obtainable down to a vertical depth of, say, 5,500 feet below the banket outcrops, probably nearly twice the amount of the yield to date, would not in the future be available.

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*Abstract of an article appearing in *The Mining and Scientific Press*, San Francisco.

Balkis, Ltd.

The report of Balkis, Ltd., for the year to August 31 states that the capital account has been modified by the forfeiture of 24,385 ordinary and 846 preference shares. The issued ordinary capital now stands at 1,055,163 shares of 1s. each and 1,079,154 1s. preference shares. A profit of £262 14s. was secured during the period under review, and balance now standing at the credit of profit and loss account being £760 12s. No sales of the company's lands have taken place during the year, although negotiations are in progress with prospective buyers. It is stated that the investments have been increased to £26,889, while short loans and sundry debtors stand at £7,049. Although the information in the report might be augmented by setting out a list of investments and by giving a general review of the position, it should be mentioned that the chairman at the meeting usually delivers a speech full of detail.

RAND'S NOVEMBER PROFITS.

A Further Decline in Earning—Figures for the Various Groups.

Whilst the aggregate profit earned by the various groups for the month of August last registered a substantial increase over the July total, which was, of course, a poor one on account of the strike, it is noticeable that the monthly totals since that date have registered declines. The August total of eight thousand pounds over the million denoted high-water mark in so far as earnings for the latter half of the year are concerned. In September the total declined to £985,315, in October to £976,615, whilst last month's aggregate was £925,447. This continued decline is directly traceable to contraction in the force of native labour employed on the mines, and it is to be observed that the November figures disclose low water mark in this regard, there being 147,569 employed on gold mines at the end of the month. Compared with October a loss of 1,436 boys is shown, whilst the total loss in complement since June last has been 42,273. About this time of the year an improvement in native labour returns usually becomes evident, and it is, therefore, to be hoped that an advance in the monthly profits will be evident in the figures for the current month, and that from now onwards the improvement will be continued.

Labour and Profit.

How much a matter of the strength of the labour force the profit returns of the mines are can be ascertained from a little scrutiny of the native labour, and group profit figures for the past eleven months. Thus it is observable that in March last, when there were 231,783 unskilled native labourers on the books of the various mines, the profit was £1,098,332. Both the earning and the numbers of natives employed were thus, during March, the highest on record.

For the past three months the profits earned by the various groups have been :—

	Sept.	Oct.	Nov.
Central Mining...	£222,619	£228,247	£199,463
Rand Mines...	218,699	219,834	212,832
Gold Fields...	88.843	77,942	79,022
Robinson...	89,671	86,689	83,080
E.R.P.M.	83,460	83,504	79,252
Kleinfontein...	23,138	23,156	21,728
Barnato	99,114	104,597	102,887
Albu...	63,199	64,195	63,174
Neumann	65,242	59,873	57,049
Mines Selection...	20,202	16,833	17,486
Goerz...	11,172	11,782	9,474
Totals...	£985,314	£976,652	£925,447

It will be seen from the above that with the exception of the Consolidated Gold Fields and the Brakpan Mines, the sole producing representative of the Consolidated Mines Selection Company, all the groups declared lesser profits in respect of November operations than for October.

Group Figures Analysed.

Considering the returns individually, the Modder B Company shows the most marked decline—from £45,309 to £34,408—of the mines of the Central Mining Group. The New Modderfontein and Robinson decreases are also substantial. The Bantjes and the City Deep record improvements, but the other subsidiaries show losses. In the Rand Mines group the Ferreira Deep shows a small advance, and the Rose Deep profit increased from £23,485 to £29,762—all other subsidiaries evidence decline. The following are profits for the two subsidiary groups under Corner House administration :—

Central Mining.—	Sept.	Oct.	Nov.
New Modder	£40,285	£47,238	£40,892
Robinson	65,650	60,454	52,741
Village Main Reef ...	30,997	32,943	27,589
Bantjes...	1,046	1,358	2,698
City Deep...	21,490	20,728	22,770
Modder B....	46,105	45,309	34,408
Village Deep	17,037	20,217	18.365

Rand Mines.—	Sept.	Oct.	Nov.
Crown Mines	115,100	113,306	107,594
Durban Rood. Deep...	3,633	3,799	3,135
Ferreira Deep...	50,282	50,754	51,450
Geldenhuis Deep... ...	10,988	8,811	6,961
Nourse Mines...	18,447	19,679	13,930
Rose Deep...	20,249	23,485	29,762

Now that the Jupiter is closed down, there are five productive subsidiaries of the Consolidated Gold Fields Company. A substantial improvement in the Knights Deep profit is the only matter calling for remark in these returns, which are as under :—

Gold Fields.—	Sept.	Oct.	Nov.
Knights Deep...	£16,189	£12,262	£17,182
Robinson Deep	28,001	28,000	26,433
Simmer and Jack.. ...	30,069	32.532	32.526
Jupiter	8.810	—	—
Simmer Deep...	3,605	3.683	1,015
Sub Nigel...	2,169	1,465	1,866

East Rand and Kleinfontein profits are each down somewhat. In the Barnato group the Van Ryn Deep records still further advance. As to the mines of the House of Albu, the Roodepoort United's return is a poor one, whilst the Goch, Meyer and Charlton and Van Ryn have each improved their earnings. No very marked fluctuations are to be noted in the figures of the Neumann group, but it may be remarked that the Consolidated Main Reef Company's profit is down over £2,000. The Brakpan Mines November earning is above the October total, but still falls below the September figure. As to the Goerz group, the Princess Estate records a small improvement, but the Geduld and May Consolidated profits are less.

Figures for these last-named groups are as under :—

East Rand Proprietary.—			
Angelo, Cason, Driefontein,	Sept.	Oct.	Nov.
New Comet	£83,460	£83,504	£79,252

	Sept.	Oct.	Nov.
Anglo-French.—			
New Kleinfontein... ...	23,138	23,156	21,728
Barnato.—			
Con. Langlaagte... ...	22,547	23,680	21,573
Ginsberg	6,546	6.059	5,743
Glencairn	3,252	3,028	2,640
New Primrose...	18,014	18,012	17,178
New Rietfontein	1,064	1,053	498
New Unified	5,163	5,153	5,207
Witwatersrand	22,075	23,021	23,604
The Quest	671	911	613
Van Ryn Deep	19,782	23,680	25,831
Albu.—			
Aurora West	5,758	5,561	4,382
Meyer and Charlton ...	21.432	22,441	23,591
Roodepoort U.M.R. ..	1,610	2,075	318
Van Ryn...	23,025	23,570	24,202
New Goch	4,015	5,455	7,490
West Rand Con.... ...	7,359	5,093	3,191
Neumann.—			
Wit. Deep...	30,709	28,135	27,114
Con. M.R....	11,076	11,542	9,137
Main Reef West... ...	5,130	4,703	4,388
Knight Central.	2,717	2,179	3,081
Wolhuter	15,610	13,296	13,329
Con. Mines Selection.—			
Brakpan Mines.	20,202	16,833	17,486
Goerz.—			
May Consolidated.. ...	3,111	3,040	1,247
Princess Estate	1,508	1,630	1,703
Geduld	6,508	7,112	6,524

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Mine Surface Workers Shield Competition.

To the Editor, *South African Mining Journal.*

Sir,—The second annual competition for the Shield presented by the Chemical, Metallurgical and Mining Society of South Africa, will be held on Sunday next, the 14th inst., at the Crown Mines, Ltd. A Red Cross flag will fly from the top of the nearest headgear. Teams will assemble at the Crown Deep Recreation Hall at 9.30 a.m., to be in readiness for the competition, which will commence at 10 a.m. sharp. Trams for the Crown Mines leave Market Square West (opposite old Market Hall) at 3, 18, 33 and 48 minutes past the hour, the terminus being within easy distance of the offices. Teams have been entered by the following mines, and a drawing will take place at 9.30 to decide the order of competition: Crown Mines, Ltd., De Beers Cons. Mines, Ltd., Knight Central, Ltd., Luipaardsvlei Estate G.M. Co., Ltd., May Consolidated G.M. Co., Ltd. If preferred, teams may bring their own stretcher, but splints will be provided. Plain triangular bandages must be provided by all teams. The attention of all competitors is drawn to the rules and conditions, particularly to No. 13, which provides that competitors shall not be allowed to communicate with those who have already competed, or with persons who may have seen the competition; to do so will disqualify the team.—Yours, etc.,

FRED. ROWLAND,
Hon. Sec.

The South African Red Cross Society,
9, S.A. School of Mines and Technology Building,
Eloff Street, Johannesburg,
10th December, 1913.

Imperial Motor Transport.

To the Editor, *South African Mining Journal.*

Sir,—I enclose particulars of the Imperial Motor Transport Council, which has been formed as a result of the unanimous desire of upwards of two hundred Colonial delegates, who attended the Imperial Motor Transport Conference held in London in July last. The enclosure indicates the objects and scope of this new organisation. The Council will work in close touch with the Royal Automobile Club, the Chairman of the Club being also Chairman of the Council, and the meetings of the Council being held at the Club. To enable the Council to deal promptly with enquiries relating to the selection of industrial motor vehicles for service abroad, or the operation of vehicles in such service, a small Technical Enquiries Sub-Committee has been formed. This Sub-Committee consists of: Chairman, W. Worby Beaumont, Esq., M.I.C.E., etc., Consulting Engineer to the Chief Commissioner of Police and to the Royal Automobile Club; Ashton M. Heath, Esq., A.M.I.C.E., Chief Inspecting Engineer to the Crown Agents for the Colonies; H.E. Wimperis, Esq., M.I.E.E., Inspecting Engineer to the Crown Agents for the Colonies; and the present writer, who will also act as Honorary Secretary of the Sub-Committee. The advice of the Sub-Committee, and if necessary of the Council as a whole, upon technical matters of this kind will be given without charge, unless the enquiries involve so much lengthy investigation as to make this course impossible. The Council is in course of forming an Alcohol Motor Fuel Committee in accordance with the request of the delegates at the recent Conference. This Committee will conduct investigations and experiments relating to the use of alcohol as a motor fuel, the general opinion having been expressed by delegates at the Conference that considerable support would be forthcoming from the Dominions and Colonies in aid of work assisting towards the production of a permanent adequate supply of fuel within the Empire.—Yours, etc.,

HORACE WYATT,
Hon. Sec.

The Royal Automobile Club,
Pall Mall, London, S.W.,
19th November, 1913.

The Divining Rod Again.

To the Editor, *South African Mining Journal.*

Sir,—Judging from reports published in the public Press recently, it seems that, at last a step in the right direction has been taken towards ascertaining what are the possibilities of mineral and water locating with the aid of the "divining rod" or some such device. A number of scientists have recently conferred together with certain exponents of the art, and, after a number of experiments, have expressed themselves as convinced that the rod, in the hands of those who have carefully studied the subject, can be used to advantage. After a number of years' careful study, I am convinced that the failures of the past have been too readily attributed to unscrupulousness on the part of those using the rod; whereas, had the subject been carefully investigated by unbiassed minds, it would have been found that the failures were the result of an imperfect knowledge of the subject. Such has been the case with inventions and discoveries in the past, almost without exception, and only with perseverance has the objective been attained. That ultimate success would result from due investigation being granted the subject of "water and mineral finding" with the aid of the rod or some mechanical device, I am convinced, after having very carefully studied the matter. It has been acknowledged that the rod has correctly indicated in numerous instances here in South Africa, and I maintain that where it has seemingly failed, was owing to a multiplicity of lodes and formations in the case of minerals, and to the presence of a mineralised formation in the vicinity of a subterranean stream of water; and that, owing only to the imperfect knowledge acquired by the user in such cases. Why should it be left to those across the seas to experiment and later on come out to this country and put the results to practical use? Surely some one could be found in the country with means and influence to give the subject a thorough investigation, and I feel sure that it would well repay in a short time. I shall be only too pleased to further correspond with anyone on the matter. Asking you to grant me space in the columns of the journal for these few lines, and thanking you in anticipation and for past favours, Yours, etc.,

A. HEAUME.

39 Pier Street, Port Elizabeth, C.P.

THE NOVEMBER OUTPUT IN DETAIL.

Further Labour Shrinkage Affects Production.

Total output	673,486 ozs.
Value	£2,860,788
Decrease	44,945 ozs.
Value	£190,913
Witwatersrand	644,320 ozs.
Value	£2,736,897
Decrease	43,195 ozs.
Value	£183,482
Outside Districts	29,166 ozs.
Value	£123,891
Decrease	1,750 ozs.
Value	£7,431
Total stamps	9,665
Decrease	64
Witwatersrand	9,115
Decrease	45
Outside Districts	550
Decrease	19

THE gold output of the Transvaal for November was declared by the Chamber of Mines on Wednesday to be 673,486 ounces, value £2,860,788. For October the output was returned as 718,431 ounces, value £3,051,701, so that November shows a decrease of 44,945 ounces, value £190,913. Last month had, of course, one day less than its predecessor, and when the daily averages are worked out the comparison is as follows:—October, £98,442; November, £95,359; so that there has been a drop of £3,083 in the rate of the yield, reducing it to the lowest figure recorded since May, 1911. The Witwatersrand area contributed £2,736,897 to last month's output, as compared with £2,920,779 in October, the shortfall being £183,482. The respective daily averages were: October, £94,206; November, £91,230; a decline of £2,976 for the month. Outside areas yielded £123,891 last month, or £4,129 per day, as compared with £131,322, or £4,236 per day, in October. There has therefore been a decline of £7,431 in the gross yield, or £107 in the daily rate of production. To some extent the recession has been accentuated by floods at the New Rietfontein and the New Heriot, but shrinkage in the labour supply is the principal cause. Labour shortage has continued to handicap the mines in the Witwatersrand area, with the result that at least one-half the mines return decreases exceeding the equivalent of normal production for one day. The Nigel, an outside property, reports that its decrease is due to smaller tonnage, lower grade, and an accident to the electric power plant, which caused a shortage of 600 tons in the quantity of accumulated slimes treated. The following are the returns of the leading companies:—

	Stamps.	Tubes.	Tons.	Value.
Crown Mines	660	24	164,000	£241,849
Randfontein Central ...	800	26	184,602	237,949
East Rand Proprietary	820	25	129,000	218,601
Ferreira Deep	245	6	52,860	99,460
Robinson	250	6	51,400	92,371
Rose Deep	300	7	63,200	80,915
New Modder	180	7	40,550	76,374
Simmer and Jack ...	320	7	67,000	72,088
City Deep	150	9	35,800	70,776
Knights Deep	400	11	83,500	68,686
Robinson Deep	100	8	46,000	64,379
Wit. Deep	245	4	46,320	64,221
	4,470	140	964,232	£1,387,669

The following table shows the declared outputs of individual mines, with the increases or decreases as compared with the September returns:—

THE LABOUR POSITION.

The figures for the past three months of the numbers employed by members of the W.N.L.A. at the last day of each month read:—

	September.	October.	November.
Gold mines	152,637	148,882	147,569
Coal mines	9,361	9,377	9,286
Diamond mines ...	12,321	12,712	12,680
Totals	174,319	170,971	169,535

THE STAMP POSITION.

The fluctuation in the number of stamps employed in the Transvaal shows a decrease of 64, arrived at as follows:—Rand: Decreases: Cons. Main Reef, 10; Knight Central, 5; Robinson Deep, 15; Village Main, 5; Miscellaneous, 10; total, 45. Outside: Decreases: Sheba, 5; Miscellaneous, 14; total, 19.

GROUP PROFITS.

The following are the profits returned for September, October and November by the mines controlled by the different groups:—

	September.	October.	November.
Rand Mines:			
Subsidiaries	£218,699	£228,246	£212,831
Eckstein group ...	222,619	219,834	199,463
Barnato group	99,114	104,597	102,887
Robinson group	89,671	86,689	83,080
East Rand Proprietary...	83,460	83,504	79,252
Gold Fields group ...	88,843	77,942	79,022
General Mining group ...	63,199	64,159	63,174
Neumann group	65,242	59,873	57,049
Kleinfontein group ...	23,139	25,156	21,728
Cons. Mines Selection ...	20,202	16,833	17,486
Goerz group	11,127	11,782	9,474
Totals	£985,315	£976,615	£925,446

INCREASES AND DECREASES.

The following returns of the November output have been filed with the Chamber of Mines. Increases and decreases compared with October are appended:—

The Witwatersrand.

	Oct.	Nov.	Increase	Decrease
	£	£	£	£
Aurora West	19,663	18,439		1,124
Bantjes Consolidated	26,085	27,037	952	
Brakpan Mines	63,852	61,936		1,916
City Deep	71,608	70,776		832
City and Suburban	51,576	46,428		5,148
Consolidated Main Reef ...	33,990	29,840		4,150
Consolidated Langlaagte ...	60,789	56,465		4,324
Crown Mines	254,779	241,849		12,930
Durban Roodepoort	15,237	15,084		153
Durban Roodepoort Deep ...	32,300	30,788		1,512
East Rand Proprietary Mines	227,763	218,601		9,162
Ferreira Deep	101,546	99,460		2,086
Geldenhuis Deep	69,017	62,807		[illegible]
Geduld Proprietary Mines	31,641	27,988		3,653
Ginsberg	20,665	19,425		[illegible]

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	Oct.	Nov.	Inc.	Dec.
Glencairn Main Reef	15,467	14,497	—	970
Knight Central	24,352	24,735	383	—
Knights Deep	70,916	68,686	—	1.933
Langlaagte Estate . . .	58.377	57.251		1.126
Luipaardsvlei Estate	19,251	18.461		790
May Consolidated	11,945	10.178	—	1,767
Main Reef West	24,989	24.582	-	407
Meyer and Charlton	35,745	36,186	441	
Modderfontein B.	75,588	62,208	—	13,380
New Goch	28,643	30 291	1.648	—
New Heriot	23,630	10,649	-	12,981
New Kleinfontein	67,259	63,155	—	4,104
New Modderfontein	83,366	76,374	—	6.992
New Primrose	33,684	32,712	—	972
New Rietfontein	15,967	14,846	—	1,121
New Unified	15,759	15,394		365
Nourse Mines	72,347	62,667	—	9.630
Princess Estate	27,971	27,644	—	327
Randfontein Central	253.203	237.949	--	15,254
Rose Deep	72,951	80,915	7.964	-
Robinson	101,831	92,371		9.460
Robinson Deep	72,530	64,379		8,151
Roodepoort United	23,520	21,209	-	2,311
Simmer Deep	49,885	42,426		7,459
Simmer and Jack	70.929	72,088	1,159	—
Spes Bona Tribute	4,685	3,938	-	747
Van Ryn Deep	56.988	57.727	739	—
Van Ryn	53,615	53,955	340	—
Village Main Reef	66,180	59,235	—	6,945
Village Deep	64,204	64,060	-	144
Vogelstruis Estate	14,519	13,801		718
West Rand Consolidated	29,628	25,142		4.486
West Rand Central	4,133	3,883	-	250
Witwatersrand Deep	66,456	64,221	—	2,235
Witwatersrand	48,139	49,015	876	--
Wolhuter	41,203	40.770	—	433
Miscellaneous producers	40,310	12,374		27.936
Outside Districts.				
Barrett	1,393	726	-	667
Ceylon Lydenburg	1,109	986	---	123
Glynn's Lydenburg	8.843	7.820	--	523
Quest	3,381	2.782	-	559
Nigel	19,943	18,363	—	1.580
Sheba	14,085	14,171	86	
Sub Nigel	8,126	8,602	476	
Transvaal Gold Mining Estates ...	38.828	39,066	238	—
Worcester Exploration	5,182	4,549		633
Miscellaneous producers	30.932	26.826	-	4.106

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	13,884	80		4,341	18,439
Bantjes Consolidated .	20,600	100	3	6,365	27,037
Brakpan Mines .	45,715	140	8	14,581	61,936
City Deep	35,800	150	9	16,662	70,776
City and Suburban .	24,700	150	2	10,930	46,428
Consolidated Langlaagte	39,550	100	10	13,293	56,465
Consolidated Main Reef	18,250	90	3	7.025	29,840
Crown Mines .	164.000	660	24	56.936	241,879
Durban Roodepoort	13,952	90	1	3.551	15,084
Durban Roodepoort Deep	22,730	100	3	7.248	30,788
East Rand Proprietary Mines ...	129,000	820	25	51.463	218,601
Ferreira Deep	52,860	245	6	23,415	99,460
Geldenhuis Deep	43,700	300	7	14,786	62,807
Ginsberg	15,166	80	1	4.573	19,425
Glencairn Main Reef	18.871	160		3.413	14,497
Geduld Proprietary Mines	19.000	60	5	6.589	27.988
Knights Deep	83.500	400	11	16.170	68.686
Knight Central	20,000	85	3	5.823	24,735
Langlaagte Estate	49,533	200	5	13 478	57,251
Luipaardsvlei Estate	7,380	60	3	4.346	18,461
Main Reef West	17,000	80	3	5,787	24,582
May Consolidated	12,500	100		2.396	10.178
Meyer and Charlton	14,628	75	2	8,519	36,186
Modderfontein B.	33,000	80	5	14,645	62.208
New Goch	28,700	120	4	7.131	30,294
New Heriot	5,398	70	1	2.507	10,649
New Kleinfontein	48,500	200	4	14.868	63,155
New Modderfontein	40.550	180	7	17,980	76,374
New Primrose	23,700	160	2	7,701	32,712
New Rietfontein Estate	14,300	120	-	3,495	14,846
New Unified	12,245	60	1	3 624	15,394
Nourse Mines	43.000	260	7	14,753	62,667
Princess Estate	21,000	60	5	6,508	27,644
Robinson	51,400	250	6	21,746	92.371
Robinson Deep	46,000	100	8	15.156	64,379
Randfontein Central	184,602	800	26	36,018	237,949
Roodepoort United Main Reef	23,610	50	3	4,993	21,209
Rose Deep	63,200	300	7	19,049	80,915
Simmer Deep . . .	55,500	180	9	9,988	42,426
Simmer and Jack . .	67,000	320	7	16,971	72,088
Spes Bona Tribute	4,987	40	—	927	3,988
Van Ryn Deep	34,250	70	8	13,590	57,727
Van Ryn . . .	38,230	135	6	12,702	53 955
Village Deep . . .	42,860	180	7	15,081	64,060
Village Main Reef	31,640	220	5	13,945	59,235
Vogelstruis Estate	12,574	75	—	3.249	13,801
West Rand Central . . .	1,953	20	1	914	3,883
West Rand Consolidated .	20,100	100	4	5,919	25,140
Witwatersrand	38,290	220	4	11,539	49,015
Witwatersrand Deep . .	46,320	245	4	15.119	64,221
Wolhuter . . .	30,000	120	4	9.598	40,770
Miscellaneous producers . . .	-	55	–	2,913	12,374
Outside Districts.					
HEIDELBERG—					
Nigel	12,800	75	1	4,323	18,363
Sub Nigel	4,720	25	1	2,025	8,602
BARBERTON—					
Barrett	—	—	—	171	726
Sheba	5,875	55	—	3,336	14,171
Worcester Exploration .	4,500	40	1	1,071	4,519
LYDENBURG—					
Ceylon Lydenburg ..	593	5	—	232	986
Glynn's Lydenburg	3,572	20	1	1,841	7,820
Transvaal G.M. Estates	13,350	75	3	9.197	39,066
KLERKSDORP—					
Quest	3,392	35	—	655	2,782
Miscellaneous producers	—	220	1	6.315	26,826

DAILY YIELD AND PROFIT.

The yield and profit aspect for the past two years for the Rand is as follows:—

	Days.	Daily yield. £	Daily profit. £
1911—			
October	31	92,891	26.040
November	30	97,905	27,483
December	31	93,282	27,605
1912—			
January	31	97,188	26,182
February	29	98,863	28,032
March	31	100,011	35,167
April	30	100,071	29.932
May	31	102.350	30,961
June	30	102,312	34.583
July	31	100.841	32,876
August	31	100,328	33,178
September	30	101,449	33,841
October	31	101,134	34,072
November .. .	30	103,035	34,677
December	31	102,200	35,734
1913—			
January	31	104,272	35,112
February	28	106,556	35,814
March	31	104,182	35.340
April	30	107,023	35,931
May	31	104,323	35.091
June	30	101,417	33,645
July	31	85,654	24,284
August	31	95,599	32,518
September	30	95,774	32.844
October . .	31	94,206	31,503
November . .	30	91,230	30,848

Nickel in Madagascar.

In a monograph addressed to the *Société des Ingénieurs Civiles de France*, Mr. Bonneiond deals with an important garnierite occurrence opened up by an English company near Ambositra, on the east coast of Madagascar. The average nickel contents are stated to be 3 to 4 per cent., the maximum being 8 per cent. At a distance of 8 kilometres there is a waterfall capable of supplying 10,000 h.p., which might be used for mining and smelting purposes. For ore transport a river discharging itself at the seaport of Manonjary would come in handy, though the said port is not very favourable for loading and unloading operations. Ore transport and loading costs are estimated at 65 to 70 francs; freight to Marseilles, 55 to 60 francs.

Rhodesian Section.

LATEST MINING NEWS.

The Cam and Motor Plant—Gaika G.M. Co.—Rhodesia Chamber of Mines—The Falcon—Health of the Natives.

ALTHOUGH all the huge machinery and plant that has been installed at the Cam and Motor Mine is giving entire satisfaction, it is understood that they do not expect to be fairly at work till New Year.

* * * *

In the report of the directors of the Gaika Gold Mining Company for the year ended June 30th it is stated that the chief feature of interest at the moment is the occurrence on the Robin Hood of extraordinarily high values. The accumulated slimes, amounting to over 50,000 tons, will no doubt eventually be worked at a profit. During the year 48,304 tons were developed, 33,549 tons were treated, and the ore reserves at 30th June were: 71,893 tons of an average assay value of 14·4 dwts. per ton, all high values being reduced to 40 dwts. per ton; 14,000 tons of rubble ore, averaging 3 dwts. per ton. The expenditure on new machinery, plant, buildings, etc., was £8,966 18s. 11d. An additional grinding pan has been recently installed, which is now giving good results. A dam has been constructed on the Que Que river, which it is considered will insure the mine against any scarcity of water in the future, and extensive additions have been made to the buildings on the mine. The installation and distribution of electric power has proved most efficient, and is now effecting a large reduction in the cost of fuel. The new slimes plant came into operation in May of last year, and has been worked throughout the year, but with poor results on account of the tailings not yet being sufficiently weathered. An improvement in this respect is expected. The following were the results for the year:—Tons crushed, 33,549; yield over plates, 11,846 ozs.; cyanide process, 35,075 tons, 2,365 ozs.; total production, 14,211 ozs.; total value, £59,838. The average of the mine working costs for the twelve months has been 23s. 0·73d. per ton of ore milled, exclusive of development costs. This is an increase of 3s. 10d. over last year's working costs, and is due to the working of the new slimes plant.

* * * *

The Executive Committee of the Rhodesia Chamber of Mines report as follows for the month of October:—Receipts during the month amounted to £45 9s. 4d. Fixed deposit to the amount of £300 matured; payments totalled £136 8s. 10d., and the balance to credit of current account on 31st October was £135 15s. 2d. £300 remained on fixed deposit and £2,000 on loan. The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of August and September, 1913:—

	August.	September.
Local	13,931	12,444
Portuguese territory ...	6,325	6,171
N.W. Rhodesia	3,544	3,320
N.E. Rhodesia	5,453	5,469
Nyasaland	5,613	6,122
Other sources	853	918
	35,571	34,444

The number of natives employed in September shows an increase of 821 when compared with the corresponding period of 1912. The distribution for the months of July and August was as follows:—

	July.	August.
Producing gold mines ...	25,284	24,853
Non-producing gold mines	8,783	9,429
Coal and other mines ...	1,195	1,437

The report of the Falcon Mines for the year ended June 30 last states that in view of the large ore reserves, development has been curtailed during the year, and the energies of the staff have been concentrated on the erection of the reduction works, and the preparation of the mine for production by the cutting of stations, box holes, and stope driving. The ore reserves during the year have been increased by 187,134 tons to 807,011 tons and their value on June 30th last was £1,977,181, or, on the basis of the present price of copper, £2,380,086. The board, after consultation with Mr. H. A. Piper, have given prolonged consideration to all facts connected with the sampling, assaying, and methods of calculating ore reserves employed by the company's staff; also to the facts connected with Messrs. Ackermann and Pickering's inspection, and, as a result, are of opinion that the valuation of the sulphide ore reserves as given in the annual report of the consulting engineer, viz., 53·9s. per ton (copper at 10s. and gold at 4s.), is conservative, and can consequently be relied upon. Every effort has been made to expedite the erection of the plant; a good deal of unforeseen delay has been caused by the inability of certain manufacturers to deliver the plant within the time specified. The directors are now advised by the consulting engineers that if no further delay in deliveries takes place, the entire plant will be completed by June next.

* * * *

In the report on the public health of Rhodesia for the year 1912 there appears the Chief Compound Inspector's report, which gives some interesting particulars regarding the administration of the various regulations under which the Inspectors of Compounds act. One point of special interest mentioned is the fact that the abolition of the night shift on the Shamva Mines led to a reduction in the number of cases of pneumonia from 160 in 1911 to 39 in 1912. If the practice could be generally adopted in Rhodesia there is no doubt that it would have a most satisfactory effect both on health and on working costs. The great impediment in the way is, however, the smallness of the vast majority of the properties, and the consequent absence of facilities to enable the requisite amount of ore being extracted during day shift. On the larger mines, however, the principle ought to be, wherever possible, adopted, if the Shamva returns given above are a fair criterion of what may be effected by it. The work done by the Compound Inspectors deserves more than passing notice. They have a most difficult and trying work to perform and, as a rule, do it tactfully. They are continually travelling about—some of them have to compass nearly 400 miles per month—and no higher tribute can be paid to their tact and devotion to duty than the plain statements that they had to prosecute in 1912 on only 18 occasions, and that the mortality rates are now down to such a comparatively satisfactory figure.

* * * *

At the annual meeting of the Matabele Queens Company, held in London in mail week, the chairman, Sir John Willoughby, stated: The recent improvements reported at the fifth level, however, is very encouraging, and gives reason to hope that a similar improvement may be met with in the sixth and seventh levels. In consequence of the residues from the slimes plant, which only came into operation at the end of last March, being considered too high, the board took advantage of the presence in Rhodesia of Mr. F. A. Marriott, a highly skilled metallurgist of the firm of Messrs. Bewick, Moreing & Co., to consult him with a view to improving the slimes plant extraction, and as to the best and most economical method of ultimately increasing the capacity of the existing plant. Mr. Marriott, after making exhaustive tests of the ore, has made certain recommendations both as regards to the treatment and also as to certain alterations and additions to the milling plant, which, when adopted, should increase its present capacity of about 16,000 tons to 30,000 tons per annum—in other words, nearly double its production—resulting in a much more efficient extraction, and at the same time a considerable reduction on working costs, estimated at no less than some 12s. per ton. Now, without computing the increased profits to be obtained by nearly doubling the output and increasing the efficiency of extraction, a saving on working costs of 12s. per ton on 30,000 tons annually treated alone would mean an additional profit of over £16,000 per annum, or the equivalent of 9 per cent. on the issued capital of the company, and, therefore, Mr. Marriott's suggestions commend themselves to the board. Much, however, as we would like to put them into immediate operation, there are certain considerations which compel us to postpone doing so at this moment. In the first place, the suggested additions to the plant would involve an additional capital outlay of about £22,000, a sum which, in view of the abnormal conditions for some time past prevailing in the money and share markets, would not only be difficult, but also costly, to raise. Secondly, we feel it prudent, and, therefore, imperative, to still further increase the existing ore reserves up to a minimum of 90,000 tons, or an amount of three years, at least, ahead of the proposed increased capacity of the plant. Lastly, as Mr. Walter Currie (our consulting engineer), much to our regret, is resigning his appointment with the company at the end of the year, and his successor, Mr. A. H. Ackermann, is now on his way back to Rhodesia, we feel compelled to await the latter's report and approval, or otherwise, of Mr. Marriott's suggestions, after a thorough examination of the mine.

THE NOVEMBER OUTPUT: GROUP RETURNS.

Continued Labour Shortage Affects Returns.

Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of November:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs	Total Estimated Profit.
Rose Deep	300	7	63,200	15/10	19.049	£29,762
Geldenhuis Deep	300	7	43,700	25/ 1	14,786	6,961
Nourse Mines	260	7	43,000	22/ 4	14,753	13,930
Ferreira Deep	245	7	52,860	17/ 8	23,415	51,450
Crown Mines	660	26	164,000	16/ 0	56,936	107,594
Durban Rood. D.	100	3	22,730	24/ 0	7,248	3,135
Totals & Averages	1,865	57	389,490	18/ 5	136,187	£212,832

Results have been seriously affected by the continued acute shortage of native labour.

The following are the results of crushing operations of Central Mining Companies for the month of November:—

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton	Total Fine Ozs.	Total Estimated Profit
Modder B.	80	5	33,000	16/ 4	14,645	£34,408
New Modder	180	7	40,550	17/ 1	17,980	40,892
City Deep	150	9	35,800	26/ 1	16,662	22,770
Village Deep... ...	180	7	42,800	21/ 0	15,081	18,365
Village Main R....	220	6	31,640	19/ 4	13,945	27,589
Robinson	250	6	51,400	14/11	21,746	52,741
Bantjes	100	3	20,600	23/ 3	6,366	2,698
Totals & Averages	1,160	43	255,790	19/ 3	106,425	£199,463

Results have been seriously affected by the continued acute shortage of native labour.

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep	46,320	£63,697	£27,114
Wolhuter	30,000	40,288	13,329
Consolidated Main Reef...	18,250	29,575	9,137
Main Reef West	17,000	21,289	4,388
Knight Central	20,000	24,421	3,081
Total for Group.		£182,270	£57,049

Barnato Group.

The following are the operations of the Barnato Group for the month of November:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.	Gross Profit including sundry Revenue.
Cons. Langlaagte	100	39,550	£56,465	£21,573
Ginsberg	80	15,166	19,426	5,743
Glencairn	160	18,871	14,497	2,640
New Primrose	160	23,700	32,711	17,178
New Rietfontein	120	14,300	14,847	498
New Unified	60	12,254	15,395	5,207
Guest	35	3,392	2,784	613
Van Ryn Deep	70	34,250	57,728	25,831
Witwatersrand	220	38,290	49,014	23,604
November totals .	1,005	199,764	£262,867	£1/2,887
October totals ...	1,005	206,908	£270,841	£104,597

The monthly gross profits for 1913 are:—January, £79,198; February, £74,114; March, £81,152; April, £82,350; May, £81,949; June, £84,369; July, £59,316; August, £89,545; September, £99,114; October, £104,597; November, £102,887.

Note.—The results at the New Rietfontein Estates were affected during November by the flooding of No. 1 shaft, due to abnormal rains in the early part of the month.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for last month of the undermentioned companies of the Consolidated Gold Fields group:

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	67,000	16,421	£32,526
Robinson Deep	100	8	46,000	15,568	26,433
Knights Deep	400	11	83,500	16,003	17,182
Simmer Deep	180	9	55,500	10,063	1,015
Sub-Nigel	25	1	4,720	2,025	1,866
Totals	1,025	36	256,720	60,080	£79,022

The sundry revenue included in the above total declared profits is as under:—Simmer and Jack, £2,500; Robinson Deep, £429; Knights Deep, £463; Simmer Deep, £674; Sub-Nigel, £351; total, £4,417. Knights Deep.—Results do not include £442, proceeds of 105 ozs. of gold from old plates and £221, proceds of 61 ozs. of gold from by-products, which amounts will be earmarked for additions to plant.

Goerz Group.

Results of operations of the crushing mines comprising the Goerz group for the month of November, 1913:—

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated.. ...	100	—	12,500	£10,155	£1,247
Princess Estate	60	5	21,400	27,578	1,703
Geduld Proprietary ...	60	5	19,000	27,920	6,524
	220	10	52,900	£65,653	£9,474

The Albu Group.

The following are the details of results regarding the November operations of the producing mines of the General Mining and Finance Corporation Group:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West...	80	13,884	£14,065
Meyer and Charlton	75	14,628	12,554
New Goch	120	28,700	22,768
Roodepoort United	50	23,610	20,909
Van Ryn	135	38,230	29,723
West Rand Consolidated ...	100	20,100	21,961
	560	139,152	£121,980

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West...	20/ 3.1	£18,447	£4,382
Meyer and Charlton	17/ 1.9	36,145	23,591
New Goch	15/10.4	30,258	7,490
Roodepoort United	17/ 8.6	21,227	318
Van Ryn...	15/ 6.6	53,925	24,202
West Rand Consolidated ...	21/10.2	25,152	3,191
		£185,154	£63,174

Robinson Group.

The following are the results for the month of November of the Robinson Group:—Langlaagte Estate: Tons milled, 49,533; total yield, 13,478 fine ozs.; estimated profit, £13,072; per ton milled, 5s. 3.34d. Randfontein Central: Tons milled, 184,602; total yield, 56,018 fine ozs.; estimated profit, ..0,008; per ton milled, 7s. 7.02d.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of November, 1913:—Central Mines: Tons crushed, 11,250, yielding 7,972·383 fine ozs. Elandsdrift Mine: Tons crushed, 630, yielding 669·317 fine ozs. Vaalhoek Mine: Tons crushed, 1,470, yielding 555·586 fine ozs. Estimated value of month's output, £38,578. Estimated profit for the month, £22,723. Labour supply still inadequate.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of November, 1913:—Tons crushed, 3,572, yielding 1,841 fine ozs. Estimated value of month's output, £7,687. Estimated profit for the month, £4,459.

Brakpan Mines.

We have received the following information in respect to the November, 1913, output:—Stamps working, 140; running time, 23 days; ore crushed, 45,715 tons; tube mills working, 8; ore hoisted, 49,691 tons; ore from dump, 2,000 tons; waste sorted, 12·14 per cent.; fine gold declared, 14,581 ozs.; value declared, £61,364, equal to 26s. 10d. per ton milled; working costs, £43,878, equal to 19s. 2d. per ton milled; working profit, £17,486, equal to 7s. 8d. per ton milled.

New Heriot.

The following are the results of the New Heriot Company's operations for November:—Tons milled, 5,398; ounces recovered, 2,507; loss, £1,336. In continuation of the information recently published in regard to the flooding of the mine, the present position is that operations for dealing with the water are well in hand, and it is hoped that milling operations will be resumed on a reduced scale about the middle of this month.

The "Safety First" Movement.

TIMBERING SAFETY RULES.

(1) Each miner should see that his timbering is safe. Ground should not be broken in advance of the timbering for a greater distance than the space necessary properly to instal one set of timbers.

(2) No defective timber should be sent down in the mine.

(3) Ash, birch, balsam and poplar should not be used as caps.

(4) The captain should see that there is a sufficient supply of timber at all levels and places wherever needed.

(5) Miners are warned to secure the roof of their working place by extending poles from the cap timbers of the foremost set into holes picked into the ground ahead. In case this cannot be done, use props or head boards. These should be left as lagging when the permanent set is put in. All holes above drifts and slices should be blocked or lagged.

(6) All timbers should be securely wedged in position and set in a proper, straight, safe manner.

(7) Great care should be exercised in picking the loose material from the back or sides, particularly after each blast.

(8) In stopes timbered with square sets the working floors shall be closely and securely lagged over.

(9) Lagging shall be long enough to reach clear across the caps.

(10) When working in raises miners should put in stage poles, one on each side of the raise, and about 2½ ft. apart, vertically.

(11) Cribbing in all raises should be solid.

(12) Winzes opening directly from the floor of the drift or stope should be kept covered by rails and protected by a guard railing to prevent persons falling therein.

(13) When placing timbers, see that the staging and platforms are secure and safe.

(14) In sinking, not more than sufficient room for another set of timber shall be left unprotected at the bottom of the shaft, except in extremely hard and firm ground, when timber shall be kept as close to the shaft bottom as good practice will permit.

(15) Timbers should be hoisted or lowered through a compartment equipped with a ladder only when absolutely necessary, and then after timber is hoisted or lowered, the ladder should be inspected to see that it has not been broken.

(16) Spikes and nails should be removed from all planking not in use, to avoid danger of stepping thereon.

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UNION MINERAL OUTPUT FOR OCTOBER.

Decrease of £114,125—Gold, Coal, and Base Metal Figures.

LAST month the mines of the Union produced minerals of the total value of £3,433,792, as against a total of £3,245,634 in September, an increase of £188,158. The details of the production in October are as follows:—

Gold	£3,052,994
Silver	9,490
Coal	189,675
Base minerals other than coal	181,633
Total value	£3,433 792

The output of diamonds is published half-yearly.

GOLD.

The following table shows the number of mines working in the various districts declaring gold and the district outputs for October:

	No. of mines.	Stamps	Tubes.	Output. fine ozs.
Witwatersrand	54	9,265	283	637,692
Heidelberg	2	100	2	6.596
Klerksdorp	3	69	2	2 977
Ottoshoop	1	5	–	41
Barberton	11	197	3	7,494
Pilgrims Rest	14	152	5	13,524
Pietersburg	3	30	—	315
Totals for Transvaal	88	9,818	295	718,642
Totals for Cape	—	—	—	8
Totals for Natal	1	5	—	84
Totals for Union	89	9,823	295	718,735

COAL.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s.	d.
Springs-Brakpan	4	55,821	39,139	4	11
Middelburg	16	395,523	338,090	4	5
Other districts	8	70,211	66,131	4	0
Totals for Transvaal	28	521,555	443,360	4	5
Totals for Cape	9	6 597	5,340	11	4
Totals for O.F.S.	5	63,068	53,446	5	3
Totals for Natal	20	319,065	244,462	6	0
Totals for Union	62	910,285	746,608	–	

COPPER AND TIN

The following is a statement showing the output and shipments of copper and tin for October:—

COPPER.

	Tons.	Shipments.
Transvaal	671	£18,565
Cape	1,117	114,489
Totals for Union	1,788	£133,054

TIN.

	Tons.	Shipments.
Transvaal	331	£36,109
Cape	5	—
Totals for Union	336	£37,318

OTHER MINERALS.

The sales and shipments of minerals, other than gold, coal, copper and tin, were:—

	Tons	Value.
Asbestos	65	£1,071
Graphite	2	74
Magnesite	44	113
Lime	5,907	9,761
Flint	33	242
Silver in gold bullion (ozs.)	76,837	9,490

ACCIDENTS.

During the month 271 accidents occurred in the mines throughout the Union, as a result of which 2 white and 59 coloured workers were killed, and 32 white and 221 coloured workers injured

Sakalava Madagascar Proprietary Oil Fields

The secretary writes:—"We have received the following cable messages from our representative in Madagascar, and shall be glad if you will kindly insert same in your valuable paper: Received 1st December—'Sixty feet blue soft clay shales small quantity oil.' Received 2nd December—'Eighty feet oil showing more freely same formation.' Received 9th December—'Hundred forty feet soft sandstones and clay oil coming out borehole.' Thanking you in anticipation."

The Blackman Intermittent Fan.

We have received an interesting descriptive circular dealing with the Blackman Intermittent Fan, which has just been put on the market. This fan, while embodying all the most recent improvements in fan construction, fills a long-felt want in stimulating a healthy and invigorating atmosphere in all kinds of rooms and halls in which stale and stagnant air formerly existed. This is brought about by this new fan which creates intermittent breezes automatically, which breezes rise and fall, as in nature, and which come and go at intervals arranged at will. The fan can be made to blow in one direction intermittently, with a lull between the blasts, or it can be made to blow in both directions alternatively. The effect of this is both natural and refreshing, and can be enjoyed without fear of the chills often caused by the persistent blasts of the ordinary fixed-type of fan. The reversing of the air current and the changing of its intensity is accomplished by means of a gradual alteration in the angle of the fan blades, which are automatically and noiselessly controlled by a simple mechanism requiring no attention. The shape of the blades of this fan is that of the Double Blackman Volume Fan, which form of blades has, after exhaustive tests, both in England and on the Continent, been proved to be the most efficient for moving large volumes of air at low pressures. Although these fans are not intended to be used as ventilators they may advantageously be placed near open windows or other air inlets, to modify the inflowing current of air so that a dangerous draught may be transformed into a beneficial breeze.

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Finance, Commerce, and Industries.

Town Hall Tenders. At a special meeting of the Johannesburg Town Council held this week to consider a report of the Town Hall Special Committee regarding the report of the architects (Messrs. Hawke and McKinlay) on the tenders received for the furniture for the new Town Hall and Municipal offices, the Committee recommended the acceptance of the following tenders:—General furniture: Messrs. Waring & Gillow (principal rooms), £3,486 0s. 9d.; Messrs. Hampton & Co. (general offices), £12,934 7s. 1d. Steel shelving and furniture to strong rooms: Messrs. Chubb & Maxwell (excluding desks to rates' hall), £4,876 19s.; The Remington Agency for Art Metal Company (desks in rates' hall), £709. Blinds, lino, carpets, curtains, coir mats, sundries and contingencies: Messrs. W. Hosken & Co. (for lino), £1,444 10s. 9d.; Messrs. Waring & Gillow (for remainder), £2,642 5s. 8d. Council Chamber: Messrs. H. H. Martyn & Co., £2,445. Town Hall chairs, etc.: Messrs. Wilks, James & Co. (chairs), £2,560; Messrs. Stuttaford & Co. (tables), £178. Reception rooms: Messrs. Waring & Gillow, £3,799 3s. 3d. Total, £35,075 6s. 6d. The Finance Committee recommends that the money be provided as follows: Already provided, £15,000; amount to be taken from Treasury balances, £14,076 6s. 6d.; amount to be taken from floating capital, £6,000.

* * * *

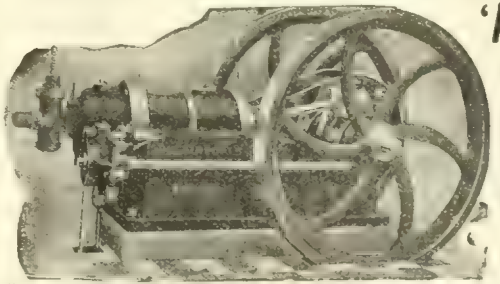
The High Commissionership. The South African National Union and Johannesburg Chamber of Commerce have had under consideration the appointment of a successor to Sir Richard Solomon in the office of High Commissioner for South Africa. While it is recognised that the holder of the office must of necessity by a diplomat, it is urged that he should have sympathetic interest in trade in South African products. The National Union has asked for an interview with the Prime Minister with the object of urging the necessity for the High Commissioner encouraging by every means in his power the advertisement of South Africa with a view to attracting population and capital, of which the country is in great need. The executive of the Chamber of Commerce has appointed a committee to prepare a memorandum to Government in which it is understood emphasis will be laid on the point raised by the National Union, and also pressing for important alterations in regard to the conduct of the mercantile dealings of the Union Government.

* * * *

Railway Extensions. The new section of the railway branch line from Nelspruit, on the Delagoa line, to Sabi, opened on the 10th of November, covers fifty-five and a quarter miles in the direction of Pilgrims Rest, and the remaining twenty miles from Sabi to the heart of the gold mining is nearing completion. The mountainous nature of the Pilgrims Rest spot, combined with the restrictions as to tenure associated with the arrangements of that town, have prevented the Union Railway Department from making its plans for the line to terminate at Pilgrims Rest. It has been arranged, says an exchange, that the terminus shall be at the new township known as Mac-Mac. On this length of line the rails are now being laid, and it is expected that the work will be completed some time in February next. This new branch line will traverse some of the finest scenery in South Africa. Mountain, glen, and plain are here seen at their best and in their best contrasts, with a number of mountain streams adding to the natural beauty of the changes. The chief commercial attraction to the district is, at present, gold mining; but many thousands of acres have been put under wattle trees, and the wattle plantations are in parts already five years old. It is proposed to establish a factory at Rosehaugh, about halfway between Nelspruit and Sabi, for the complete treatment of the wattle bark on the spot. The district is, therefore, one which has the brightest prospects, particularly in view of the steady development of the gold-mining industry.

More Power for Delagoa Bay. A cable sent recently from Delagoa Bay to Lisbon set out the excessive burden that would be imposed on the Port by accepting the price fixed by the Delagoa Bay Development Corporation for the supply of electrical power after the completion of the coaling installation. The message proposed that the Government should erect a power station of its own with a sufficient capacity to satisfy the present and future requirements of the harbour, and in justification of their proposals the Council showed that the price of 2·4d. per unit, besides the amount of £5,000 spread over a period of three years as demanded by the company, would be reduced to 20·1 reis (about 1d.), in the probable event of the consumption being 1,200,000 units per annum. This would mean a saving of over £20,000 in three years, which would be more than the cost of the power station itself, this being estimated at £18,000, and leaving a margin of 15 per cent. for amortisation and the upkeep of the plant. The Council foresaw the possibility of the Government objecting to the proposal, owing to the provisional contract entered into with Lieut. Campbell for the yearly supply of 6,000,000 units at a very low rate, but explained in their cable that such a contract constituted an impossible proposition. In order to obtain a sufficient hydro-electrical power from the Inkomati River it would be necessary to make a sluice dam over 49 feet high, and this among other objections would mean the inundation of the railway line. On the other hand, if the concessionaire had to work with a generating station equipped with steam power his annual loss at the price of the contract, and in view of the quantity of units he would have to deliver, would amount approximately to £15,000. For the dynamic requirements of the coaling installation during the first ten months the old plant now lying at the railway workshops could be utilised in connection with the battery of accumulators, which had already been landed and would be ready at the beginning of next month. The Council asked for an urgent reply, so that no time might be lost in calling for tenders from the principal manufacturers of electrical material should their suggestion meet with the approval of the Central Government.

An order for electric winding equipment has been placed with the British Westinghouse Co. for the E.R.P.M. This comprises two 1,500-b.h.p. 550-volt 33·4-r.p.m., d.c. motors direct coupled to the winding drum, one on either side. These are supplied with current from a motor-generator set operating on the Ward-Leonard system, and comprising a 4,200-b.h.p. three-phase 25-period 3,000-volt a.c. motor direct-coupled to two 1,375-kw. 550-volt d.c. generators, with a direct-coupled exciter for the generators and the winding motors. All the necessary control gear and switchgear are also being provided by the electrical contractors.



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THE WEEK IN THE SHAREMARKET.

Fluctuating—Firmer on Dividend Declarations—Labour Scarcity Still Gives Trouble.

The dividend declarations caused the market to firm up during the week, but no great increase in business resulted. The outrageous attack on Sir Lionel Phillips was thought at first to be due to political motives and had a bad effect. The shortage of native labour is also a serious factor, and it must be some little time before things improve in this direction. The dividends so far declared are regarded as satisfactory, and ought to have a good effect oversea. Locally, diamonds still monopolize what little activity there is, and there are hopes of some increase of interest in them before Christmas.

	Fri., 5th.	Sat., 6th.	Mon., 8th.	Tues., 9th.	Wed., 10th.	Thurs., 11th.
Adair-Ushers	0 3*	—	—	0 3*	0 3*	0 3*
African Farms	15 3*	15 6*	15 6*	15 6*	15 7	15 6*
Apex Mines	18 0*	17 6*	17 6*	18 0*	19 6	20 6
Aurora Wests	6 0*	—	6 0*	0 6*	6 0*	—
Bantjes Consolidateds	13 6	13 6*	13 6*	13 6*	13 6*	14 0*
Benoni Consolidateds	—	1 9*	—	2 0*	2 0*	2 1*
Brakpan Mines	—	45 0*	45 0*	45 0*	—	46 0*
Breyten Collieries		27 0*	27 0*	27 0*	27 6*	29 0
British South Africa	—	—	18 6*	19 0*	19 0*	18 6*
Bushveld Tins	0 6*	0 7†	—	—		0 6*
Cinderella Cons.		2 6*	—	—	3 6*	1 9*
City and Suburbans	48 6†	48 6†	48 6†	47 6	47 6*	47 9*
City Deeps	53 6*	53 0*	53 0*	53 6*	53 6*	54 3*
Cloverfield Mines	4 1*	4 1*	4 2*	4 3*	4 4*	4 5*
Cons. Gold Fields	—			—	40 0*	—
Cons. Investment	16 6*	18 0†	16 3*	17 0*	17 0*	
Cons. Langlaagtes	28 6*	28 0*	29 0†	—	28 6*	23 3*
Cons. Main Reefs	17 0*	17 3	17 3*	17 0	17 3*	17 6*
Cons. Mines Selection	—	—	—	6 6*	7 0*	—
Coronation Collieries... ...	12 6*	12 6*	12 6*	—	—	—
Coronation Freeholds	0 5*	0 5*	0 5*	0 5*	0 5*	0 5*
Crown Diamonds...	7 6*	7 6*	7 6*	7 6*	7 6*	7 6*
Crown Mines	120 0*	120 0*	—	123 0*	—	
Cron Mines Debentures ...	—	£97½†	—	—	—	—
Doornhoek Tins	—	6 6†	—	—	6 0†	6 0†
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	8 0*	8 0*
East Rand Coals	1 9*	1 9*	1 10*	1 10*	1 11*	1 11*
East Rand Deeps	1 3*	1 6†	1 3*	1 3*	1 4*	1 4*
East Rand Props.	38 0*	38 0*	38 6	38 3*	40 0*	39 0*
East Rand Debentures ...	—	£87½†	£87½†	£87½†	£87½†	£87½†
Eastern Gold Mines	1 0*	1 0*	1 2†	1 0*	1 0*	1 0*
Frank Smith Diamonds ...	6 0*	6 3	6 0*	6 3	5 9*	6 0*
Geduld Props.	20 3*	20 6*	22 0†	20 9*	21 6*	
General Minings	—	—	—	—	9 0*	
Glencairns	—	—	3 3†	—	2 6*	2 6*
Glencoe (Natal) Collieries	7 6	7 6	7 3*	7 0*	7 3*	7 3*
Glynn's Lydenburgs	13 0*	13 3*	13 6†	12 6*	12 0*	12 0*
Government Areas	17 9*	18 0*	18 0*	18 0*	18 3*	18 6
Jupiters	3 9*	4 0*	3 9*	3 9*	4 0*	3 9*
Kaalfontein Diamonds ...	0 4*	0 4	0 4*	0 5*	0 4	0 3*
Klerksdorp Props.	1 11*		1 11*	1 11*	1 11	1 11*
Knight Centrals	7 0*	7 3*	7 4	7 3	7 6	7 4*
Lace Props.	2 9†	2 9†	2 9†	2 4	2 6*	2 6*
Luipaardsvlei Estates	8 6*	8 6*	8 6*	8 6*	8 6*	8 6*
Lydenburg Farms	2 10*	2 10*	2 10*	2 10*	2 10*	2 6
Main Reef Wests	6 0*	6 0*	6 0*	—	—	6 0*
Do. Debentures	—	—		—	—	£62½*
Meyer and Charltons	105 0*	—	—	106 3*	—	106 3*
Middelvlei Estates	0 9*	0 9*	0 9*	0 9*	0 9*	
Modderfontein B.	—	—	—	78 3	80 6*	
Modderfontein Deeps... ..	34 9	34 9*	35 0	35 9	37 3	36 9
Natal Navigation Colls. ..	—	15 0*	—	—		15 0*
New Boksburgs	0 9*	0 9*	0 9*	0 9*	0 9*	
New Eland Diamonds ..	26 3†	24 0*	24 0*	25 0*	25 0*	25 0*
New Era Con.	5 3*	5 6*	5 3*	5 6	5 6*	5 3*
New Geduld Deeps	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
New Kleinfonteins	21 6*	21 6*	22 0	22 0*	22 9	23 3
New Modderfonteins	—	225 0*	225 0*	—	225 0*	235 0†
New Rietfonteins	3 6*	3 9*	4 0*		—	—
New Unifieds	13 6*	—	13 9*	13 6*	—	—
Orange Diamonds	1 9	1 11†	1 7*	1 8*	1 9*	1 9*
Piggs Peak	9 0*	9 0*	9 0*	9 0*	—	9 0*
Potchefstroom Estate	—	—	—	—	0 6*	—
Pretoria Cements	45 6*	46 0*	—	46 0	47 0	46 0*
Princess Estates	4 0*	—	—	4 0*	—	4 0*
Rand Klips	1 11*	1 11*	1 11*	2 0*	2 0*	2 1*
Rand Nucleus	1 9†	1 6*	1 6*	1 6*	1 6*	1 6*
Randfontein Deeps	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Randfontein Estates	23 0*	23 0*	23 6†	23 0*	23 0*	23 6*
Robert Victors	—	25 0*		28 3*	30 0*	29 6*
Robinson Deeps	28 0*		—	—	—	27 6*
Rooiberg Minerals	29 0*	29 0*	29 0	28 3*	28 0*	28 6*
Rood. Durban Deeps	19 0*	19 0*	19 0*	19 0*	19 3*	—
Ryan Nigels	3 0*	3 1*	3 0*	—	3 1*	3 1*
Shebas	5 0*	5 0*	5 0*	5 0*	5 0*	5 0*
Simmer Deeps	—	1 0*	1 0*	1 0*	1 0*	—

	Fri., 5th.	Sat., 6th.	Mon., 8th.	Tues., 9th.	Wed., 10th.	Thurs., 11th.
S.A. Breweries	—	40 0*	—	—	40 6†	39 6†
S.A. Diamonds	—	30 0*	30 0*	30 0*	30 0*	30 0*
S.A. Lands	2 10	2 10*	2 10*	2 10*	2 10*	2 10*
Springs Mines	10 6*	10 6*	10 6*	10 6*	10 6*	10 6*
Steyn Estates	—	—	—	—	9 0*	—
Sub Nigels	7 6*	7 9*	7 9*	8 0†	7 6*	7 6*
Swaziland Tins	42 6	44 0†	44 0†	45 0†	45 0†	45 0†
Transvaal and Delagoa ...	38 0*	40 0*	40 0*	—	40 0*	40 0*
Transvaal Coal Trust ...	29 0*	29 0*	—	—	29 0*	—
Transvaal Lands ...	—	—	—	—	20 0*	—
Transvaal G.M. Estates ...	49 6†	48 0*	49 0†	49 6†	50 0†	47 6*
Tudors	2 0†	—	2 0†	—	—	—
Van Ryn Deeps	35 3*	35 6*	35 3	35 6*	35 3	35 6*
Village Deeps	—	—	—	—	34 0*	36 0
Vogel Deeps	—	0 3	0 6*	—	0 6	0 7*
West Rand Cons.	—	—	—	—	8 6*	—
Western Rand Estates ...	—	—	2 0†	—	2 6†	—
Witbank Collieries...	41 0*	41 0*	41 0*	41 0*	41 0*	41 0*
Witwatersrands	67 0*	67 0*	—	—	68 0*	68 6*
Wit. Deeps	55 0*	55 0	54 6*	54 0*	54 0*	53 0*
Wolhuters	12 0*	12 3†	12 0*	12 3*	12 3*	12 3*
Zaaiplaats Tins	32 3*	32 6	32 0	31 0*	31 0*	—

*Buyers. †Sellers

Mr. C. H. Wilkins is leaving this week for England on a business trip.

* * * *

The ordinary monthly general meeting of the Chemical, Metallurgical and Mining Society will be held in the Lecture Theatre, South African School of Mines, Eloff Street, Johannesburg, this (Saturday) evening, at 7.45 o'clock.

Zaaiplaats Tin.

The results for the month of November, 1913, were as follows:—Days run, 26·5 days; ore milled, 3,401 short tons; residues re-treated, 467 short tons; concentrates won, 110 long tons; average value of concentrates, 70·4 per cent. metallic tin; estimated profit for the month, excluding Government tax on profits, £7,359 15s. 0d.; add adjustment in respect of estimated values of previous shipments, £64 2s. 7d.; profit declared for the month, £7,423 17s. 7d.; capital expenditure, £95.

Nigel G.M. Co.

The returns from this company's mine for November are as follows:—Ore milled, 12,800 tons; gold recovered, 4,323 fine ozs.; profit, £3,800. The decrease is attributable to the smaller tonnage crushed, which was of a lower grade, and to an accident to the electric power plant, resulting in a shortage of 600 tons in the quantity of accumulated sands treated.

Luipaardsvlei Estate.

The following is the result of operations for the month of November, 1913:—60 stamps ran 28·989 days, crushing 17,380 tons, yielding 1,828 ozs. fine gold; 3 tube mills ran 29·169 days, yielding 699 ozs, fine gold; sands treated, 12,490 tons, yielding 1,322 ozs. fine gold; slimes treated, 4,890 tons, yielding 497 ozs. fine gold; profit from operations, £2,542; sundry revenue, £950; total profit, £3,492; working costs per ton, 18s. 1d.; total working expenses, £15,703.

Sheba G.M. Co.

The following were the results of operations at the Sheba mine for the month of November, 1913:—Crushed 5,875 tons; yielded 3,335 ozs. fine gold; estimated profit, £4,276.

Kolmanskop Diamonds.

The output of diamonds from this company's property at Luderitzbucht for the month of November was 7,293 carats. Scarcity of labour and rains experienced during the month account for the low production.

Engineering Notes and News.

ROCK DRILL ECONOMICS.

An Authoritative Review of the Evolution of the Rock Drill up to the Leyner Machine.

By W. L SAUNDERS.*

We seldom stop to think how important the rock drill has been in our industrial progress. Dr. Raymond has said that it is the foundation of all the work of the mining engineer. Railroads, even in America, might have successfully followed the foothills and hand drilling might have been a feeble substitute for the rock drill in leading through impassable barriers, but railway efficiency would have fallen far short of its present status, and the cost of transportation by rail would have been greater than it is at present. In this we are able to see that the civil engineer might possibly have survived without rock drill economics, but not so with the mining engineer. The history of modern mining engineering is closely related to the history of progress in the art of building a rock drill. Our so-called precious metals would have been indeed precious without this valuable auxiliary. The wealth of the world, especially in its gold, silver, copper, zinc, lead, and tin, would have been enormously curtailed, limited by an inability to increase the output in proportion to the demand, and further limited by the fact that low-grade propositions could not have been worked at all. Examples of this are seen in the Homestake, the Alaska Treadwell, the mines of South Africa, and in most of the important mines of Michigan, which, though once high-grade, are now low-grade properties.

EVOLUTION OF THE ROCK DRILL.

As late as October, 1910, E. M. Weston, of the Transvaal University College, writing on the subject of rock drills, said: "There is much vacant ground for careful and intelligent experiment and invention. Hammer drills are only now being developed, designs are changing every month, difficulties are being overcome and sometimes new ones encountered; nor has the last word been said in the design of piston drills." No better excuse may be given for this paper at this time than the fact, now generally admitted, that in the last two or three years the study of rock drill economics has been pursued so vigorously and so successfully that in design, material and workmanship the rock drill of to-day is a superior machine, doing more work, standing up to its work longer, and better adapted to conditions heretofore unknown than the machines of the past. Lighter in weight, and more easily handled by the operator, it is an aid to the miner in very materially reducing the cost of ore per unit of labour, repairs and power consumption. There has, in fact, been an evolution in the rock drill from a piece of steel with a bit on the end of it, struck by the hand of an operator, to a similar piece of steel struck by a power hammer. Between these two extremes we have seen the jumper, the hand-operated drill, and the power-driven machine, which started with the cumbersome rock drill of J. J. Couch, about 1850, followed by the reciprocating machine of Joseph W. Fowle a few years later. Fowle's original idea of the cutting tool being an extension of the piston rod continuing to hold supremacy in many simplified forms up to a very recent period. It is interesting to follow the evolution of the percussive type of rock drill. We must bear in mind that there are two distinct types of power-driven machines—the reciprocating and the hammer drill. Fowle's first machine was mounted upon wheels, and weighed several thousand pounds. The Burleigh drill, which was a development of Fowle's invention, Burleigh having purchased the Fowle patents, was a machine mounted either upon a carriage or a tripod, but in any case it was difficult to get the weight below a thousand pounds. André, in his admirable work on coal mining, published a generation ago, states that a machine rock drill should be "simple in construction and strong in every part." He follows this with the statement that it should be "as light in weight as can be made consistent with the first condition." The problem in percussive drills has always been to reduce the weight, provided in so doing the strength of the machine is not brought below the breaking point. The struggle to reduce the weight at first met with considerable success when air pressures of from 40 to 60 lb. were in vogue. It was found, however, that it paid in mining work to use high air pressures, and this at first interfered with the efforts made by engineers to bring down the weight. There was even a period, some 20 years ago, when some engineers advocated heavy rock drills as best and most efficient in the end. Successful contractors specified large machines, claiming that by their use they were able to increase the air pressure, to get a heavier blow, to save upkeep expenses, and to reduce the cost of excavation. Heavy drills invariably called for heavy mountings, and here is where an added difficulty was experienced, because heavy mountings were cumbersome underground, they were in the way, it was necessary to employ more men to handle them, and they could not be used at all in narrow places. Here began the struggle for supremacy between the percussive and the hammer types—a struggle which has recently resulted in the adoption of the hammer type as the most useful drill for general mining purposes.

THE MODERN ROCK DRILL.

The mining drill at the present time is a machine which weighs from 60 to 150 lb. It is largely a one-man machine, though under many conditions of work it is still best to add a helper. The percussive or piston type still holds its supremacy for heavy work, even in mines where large stopes are encountered, as, for instance, at the Homestake; but this percussive drill is now a machine which safely withstands pressures of from 100 to 110 lb., and its weight has been considerably reduced because of changes made in both design and material. This type of drill now used in the stopes at the Homestake weighs 137 lb. unmounted, and mounted on column with arm about 375 lb. Its work is chiefly in down-holes. Each part of the machine represents a study in material. The metal itself and the treatment it receives in the shops are both regulated in accordance with the work that each particular part has to perform. All our knowledge of metallurgy is taken advantage of in the construction of the drill. The cast-iron is not ordinary cast-iron. It resembles it only in that the metal is cast. The composition is made up to suit rock drill service, and the metal is treated with special reference to the work it is to do. The steel is not common steel, but it is alloyed to suit each particular part. It receives a hot crude oil bath, and it goes through many processes before it is finally coupled up with the other parts into a complete drill. Special metal and special treatment are not confined to the piston or percussive type, but they apply equally to the hammer type. In fact, it was because of the necessity for lighter weight and greater strength in the hammer type that the study of the metallurgy of the rock drill was initiated and carried to a successful issue.

THE QUESTION OF METAL.

The first great improvement made in the piston or percussive type has been in the metal used, and this has resulted in greater strength, greater durability, and a lighter weight of machine for higher pressures. There has also been a change in design, which in the main has been confined to the valve motion. The chief aim of the designer has been to get greater speed. This means a greater number of blows, and in order to do this valves have been provided which open and close quickly, and which have large ports. It is obvious that, other things being equal, a piston type of drill of large piston area will do more work than the same type of drill with a smaller area. The larger machine, which drills more, is handicapped by its weight, and when the net efficiency is figured up it has been found that it sometimes pays to get less drilling capacity with a machine which is more readily handled. Here the question of upkeep is introduced, because, generally speaking, the heavy type of machine costs less for repairs than the lighter type. The designer, taking all these things into consideration, has sought to increase the diameter of the piston so as to provide the drilling capacity of the heavy type with a machine of considerably less size and weight. This has in a measure been accomplished by the use of superior material and a design which shortens the piston, putting the extra bearing into the front head, where it is lighter. Through the use of a type of valve known as the "Butterfly," a quick opening of large area is provided, thus increasing the number of strokes, and thereby bringing up the drilling capacity. This has been done with no increase in air consumption that it not compensated for by increased drilling power.

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CAST STEEL VALVES
For 1,300lbs. Working Pressure.
STOCKS IN JOHANNESBURG AND DURBAN.

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*Abstract from paper read before Butte meeting, A.I.M.E.

AIR CONSUMPTION.

Air consumption in rock drills is much misunderstood. Assuming that the piston and valves are tight, in other words, where there is no leakage, air consumption is usually dependent upon the number of strokes delivered. It is assumed, of course, that a constant diameter and length of stroke are used, and that the pressure is uniform. It is plain that if we are able to utilise air or steam at 100 lb. gauge pressure for the full length of stroke when a percussive drill delivers its blow, we are going to get the hardest blow that is commensurate with the diameter, length of stroke, and pressure of the machine. If this blow is too hard—that is, if it breaks the steel, destroys the bit, or creates a condition where the drill is unmanageable on its mounting, then we have the alternative of reducing the size of the machine, and in this way getting lighter weight, which is always desirable when it is consistent with the other conditions. We all know that the class of rock usually determines whether or not we are striking too hard a blow; but, assuming that the class of rock is uniform, or that it is determined and understood, the engineer is obviously justified in providing a drill which will strike the hardest blow that the machine and the rock will stand without destructive consequences. We see, therefore, how important it is to start with a machine which has a valve motion and ports so designed that the full power pressure will follow the piston the full stroke until the blow is delivered. Having this condition, as light a machine should be used as will stand up to the work

It naturally occurs to one that a quick-opening valve and a large port will bring about greater speed, but the question is asked, is not this condition wasteful in air consumption on the return or back stroke? It will be generally admitted that it pays to get the blow, but why should the same conditions that give us the blow obtain where the piston returns for another stroke? There are two reasons why this is advantageous. One is that the pull-back on a piston type of rock drill is sometimes of as great importance in the long run as the blow. A weak pull-back reduces the speed of the machine, causing it to come back more slowly than it went forward, and it has the further disadvantage that holes that are not straight, or which are out of round, and where seams and other irregularities are encountered, will act to retard the steel during its reciprocations. This considerably reduces the efficiency of the machine, not only because it cuts down the number of blows delivered, but because it weakens the strength of blow. The steel is held back in its effort to reach the full stroke and a laboured blow, with sometimes a shorter stroke, is the result. Now, it is quite true that in good, clean, hard rock, without seams, and where holes are drilled to reasonable depths, it might pay to save air on the return stroke. As a matter of fact, this is always done in a piston drill, because the diameter of the rod must be subtracted from the piston area. The percussive piston type of drill is naturally a compounded machine which hits a harder blow forward than backward, because it has the full piston area at one end and a reduced area at the other. It is not a difficult matter to regulate this to any degree desired by increasing or decreasing the size of the piston rod or by increasing or decreasing the valve and port areas on one end of the stroke and not on the other. But every attempt to compound a piston type of drill by putting a pressure in front of the piston is a mistake. Just in proportion as a pressure is introduced in the front end, it would cushion or restrict the force of blow, and in doing this, as has been previously pointed out, we make it necessary to increase the weight of the machine in order to get the effective maximum blow. It is, therefore, a very dangerous expedient in the design of piston drills to attempt to compound the stroke. Reduced air consumption is easily effected at the sacrifice of efficiency. Air at 100 lb. is delivered to a percussive drill at a cost that varies from 40c. to $2 per day. To save 25 per cent. of this is all that compounding could reasonably be expected to accomplish, and this at the maximum is only 50c. a day. Experienced engineers will have no difficulty in seeing that there are many ways underground by which this and larger amounts may be lost through a machine which must inevitably be weakened in certain other directions in order to effect a small saving in air economy. Under most conditions of service it pays to conserve labour and upkeep expenses, giving first consideration to those things which cost most. A small reduction in drilling capacity, or a few idle hours, means an expense which will easily run in excess of any possible saving in air.

AIR SAVING.

The hammer type of drill is a natural air saver, and it is in the design and construction of this type that air economies may be effected safely and without sacrifice. The hammer drill is essentially a machine for mines. It represents the evolution of the rock drill from the piece of steel struck by a hammer through the various stages of percussive machines back again to the hammer-driven blow upon the steel, the difference being only that the blow is a rapid power blow. A hammer drill is economical in air consumption, because, in the first place it reciprocates a light plunger, which weighs only a few pounds, while with the piston drill not only must the heavy piston be thrown backward and forward at high speed, but it carries with it the steel and bit. In hammer drills the power is utilised, not in overcoming the inertia of a heavy body, but in compensating for that inertia through the high speed of a light body. A heavy mass moving slowly may give the same impact of blow as a light mass moving rapidly. The effective work done at the bottom of the hole is represented by the weight multiplied by the velocity. The same effect may be produced by subtracting from the weight and adding to the velocity, or *vice versa*. In a piston or percussive drill velocity is limited, while in a hammer drill it is practically unlimited, and here is where the great possibilities of hammer drills have come in.

(*To be continued.*)

Cape Copper Co.

At a meeting of shareholders to be held on December 17, the board of directors of the Cape Copper Company, Ltd., will submit a proposal to increase the capital of the company by £100,000 in £2 ordinary shares.

Another Gold Mine in German East Africa.

The Nigodi goldfields, near Ikoma, formerly owned by the Central African Mining Company, have been acquired by a private concern. Immediately upon the conclusion of the transaction the erection of a 10-stamp crushing mill and a reduction plant of corresponding capacity has been started.

Dont's for First-Aid Men.

The following rules for first-aid workers are published by Allen S. Snyder, in *Coal Age*, September 13, 1913 :—

Don't touch a wound with the hands.
Don't disturb blood clots.
Don't be rough with the patient.
Don't probe for a bullet or any other body imbedded in the flesh.
Don't wash wounds unless you sterilise the water.
Don't pull or tear off clothing—cut it away.
Don't attempt to remove pitch, varnish or wax from a burned surface.
Don't bring ammonia too close to the nostrils.
Don't touch the eye with dirty fingers or an unclean cloth.
Don't put bandages on too tight.
Don't let the patient know his condition is serious.

The American diamond outlook is improving. The effect of overbuying before the new tariff was declared is steadily diminishing. It is expected that the excess will be absorbed in a few month. Meanwhile the market for high-class stones is good.

Frank Smith Diamonds.

The results at this company's mine for the month of November were as follows:—42,176 loads washed, yielding 1,632 carats.

Manicaland Output.

The mineral output of the Companhia de Moçambique, Manicaland, for the month of October, 1913, was as follows: Reef: Mill: Gold won (fine gold, 385 ozs. 6 dwts. 5 grs.; tons crushed, 1,841, value £1,618 5s. 1d. Concentrates (estimated): Gold (fine gold), 35 ozs. 10 dwts. 5 grs.; tons, 5·698, value £150 18s. 4d.; silver and lead value, £31 11s. 11d. Cyanide: Gold recovered (fine gold), 14 ozs. 5 dwts. 19 grs.; tons treated, 126, value £60.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's Theatre—Wheeler-Edwardes Gaiety Company	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Automobile Notes.

The New Motor Car Ordinance.

The attention of motorists is invited to the provisions of the Motor Car Ordinance which comes into force on the 1st of January, 1914, and to the necessity for registering their cars or motor cycles with the nearest registering authority. The registering authority will issue a certificate of registration, which will bear the distinctive mark and number which must be affixed or painted on the car or cycle in the manner prescribed by regulation, copies of which can be obtained from any registering officer or from the Administrator's office, Pretoria. There is no charge for the certificate of registration, which must be obtained immediately the new Ordinance comes into operation. The attention of motorists is also drawn to the necessity for obtaining a driver's licence, in accordance with the Ordinance. They should obtain a certificate of competence from the nearest Examining Body, which must be presented to the Issuer of Licences, who will issue a driver's licence on payment of 10s., in the case of a motor car, and 5s. in the case of a motor cycle. The Ordinance provides that every car or motor cycle owner shall take out an annual licence for such car or cycle, but that any existing licence, issued by a Local Authority, shall expire before a licence, under the new Ordinance, is necessary. Copies of "Gazette" Notices containing regulations, lists of Registering Authorities, Issuers of Licences, and Examining Bodies, can be obtained from any Magistrate, or from the Administrator s office, Pretoria. Copies of the Ordinance may be obtained from the Government Printer, Pretoria.

* * * *

Examining bodies are being appointed for Johannesburg and the Reef, as follows: Johannesburg, Boksburg, Benoni, Springs, Germiston, Roodepoort-Maraisburg, Krugersdorp. The Chairman in each case is the Magistrate, from whom information regarding the issue of certificates of competence can be obtained. The Registering Authorities and Issuers of Licences for Johannesburg and the Reef are the Town Clerks of the following Municipalities: Johannesburg, Benoni, Springs, Roodepoort-Maraisburg, Krugersdorp. In Boksburg and Germiston the Municipal Licence Inspector and the Town Treasurer are the respective officials appointed Registering Authorities and Issuers of Licences. For the Johannesburg Magisterial District, excluding the Municipality of Johannesburg, the Chief Magistrate is the Registering Authority, and the Receiver of Revenue is the Issuer of Licences. For the Boksburg Magisterial District, excluding the Municipalities of Boksburg, Springs, and Benoni, the Magistrate of Boksburg is the Registering Authority, while the Receiver of Revenue, Boksburg, is the Issuer of Licences. For the Krugersdorp Magisterial District, excluding the Municipalities of Krugersdorp and Roodepoort-Maraisburg, the Magistrate is the Registering Authority, while the Receiver of Revenue is the Issuer of Licences. For the Germiston Magisterial District, excluding the Municipality of Germiston, the Magistrate is the Registering Authority, and also Issuer of Licences. Motor car owners should apply to the Examining Body, Registering Authority or Issuer of Licences appointed for the Town or District in which they reside.

* * * *

A new jet for carburettors is the Ideal Micrometer jet, the advantages claimed for which are: (1) That it sprays the fuel at right angles to the air stream with its greatest surface area to volume, *i.e.*, the jet is in the form of an annular disc or flat spray; (2) that it can be easily and quickly readjusted to suit fuels of various densities by means of a micrometer scale, and when the correct setting has been found, it can be permanently locked in any desired position. The manufacturers are the Ideal Carburettor Company, Glasgow, and the price is 12s. 6d.

* * * *

The Humber, Sunbeam, Minerva and Straker-Squire firms have entered for the Isle of Man Tourist Trophy Race next year, with a total of nine cars. A number of other firms have intimated their intention of entering cars for the race.

* * * *

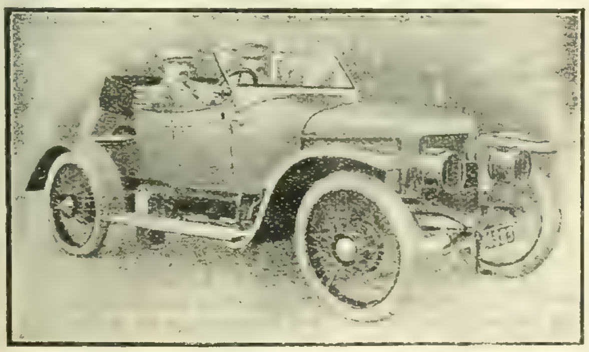
At the last meeting of the Committee of the R.A.C., London, it was resolved that in the event of war calling for the mobilisation of the Territorial Forces, it was desirable that the Royal Automobile Club be handed over to the London County Territorial Association and other analogous bodies to be a general hospital.

* * * *

Quite a number of English manufacturers are now catering for the man of moderate means with attractive propositions ranging from £200 to £350, competing successfully with the cheap American productions.

* * * *

The engine-starter formed one of the chief attractions at the Olympia Show this year, and much discussion was current regarding the comparative merits of compressed air, electricity, and the gear and positive methods of operation. Of these, electricity is the most popular—an increased number of cars being fitted with starters electrically operated. The Wolseley, Sunbeam, and S.C.A.T., fit the compressed air device. The N.B. car is fitted with a mechanical starter, the mechanism of which is so arranged that the change-speed lever, when moved into an extra slot provided in the gate quadrant, makes connection with a rack-and-pinion gear actuating the lay shaft of the gear box. This gear conveys the motion of the change-speed lever to the clutch-shaft and thence to the engine.



15·9 H.P.Colonial Vulcan.

" Imperial," Three-seater with Two-seat Dickey.

Important Notice.

ONE CAR, as per illlustration, for immediate delivery
Price £450 complete.

ONE 5-SEATER, arriving incoming mail.
Price £475 complete.

These cars are beautifully finished, and deserve the closest inspection

Demonstrations and all particulars from the Sole Agents:—

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Phone 2570. | 67, Kotze Street, Hillbrow. | Box 1940

New Patents.

498. Conrad Schlumberger.—Process for ascertaining the nature of the sub-soil by the aid of electricity.
499. William George.—Improved shot hole tamping plugs.
500. Wilson Barr.—Improvements in account registers.
501. William Hosken, and Emanuel Nowag, and British South African Explosives Co., Ltd.—Improvements in securing fuse and detonators in blasting cartridges.
502. Alfred Davies.—Improved means for ventilating closet pans and seats.
503. John Christian Reul.—An improvement relating to paraffin lamps and lamp wicks.
504. Frederick Thomas Carthew.—Improvements in supplying liquid to rock drills.
505. Gabriel Jacobus Luyt Wannenburg.—A dust preventor.
506. William George.—An improved hammer for smithing and like purposes.
507. Max Ulrich Schoop.—Improved process of and apparatus for applying coatings or deposits to surfaces.
508. Alfred William Bruce.—Improvements in and relating to steam superheaters.
509. Carl Hermann Hansamann.—Process for converting unsaturated fatty acids and their esters into saturated compounds.
510. Col. Sir Frederic Lewis Nathan, William Rintoul and James Thorburn.—Improvements in and relating to explosives.
511. Henry Ernest Massmann and William Richard Tindall.—An improved device for use in connection with rock drilling machines, coal cutting machines and other mechanical appliances used for mining purposes.
512. Philip James Sampson.—An improvement in fountain pens.
513. Edward Marryatt Grant.—Dust extractor.
514. William Holman James.—Electro-magnetically operated reciprocating mechanism.
515. Thomas Graham Martyn.—Improvements in coal-fired furnaces for assaying and the like.
516. William Thomas Anderson, Edward Henry Johnson and Percy Ralph Nethersole.—Improvements in treating mine dumps or other similar depositing sites for allaying dust.
517. Lancelot Ussher and Armour Hall.—Improvements in pipe and tube fittings and couplings and the like.
518. Joseph Foulkes Williams.—Improvements in electrical fuse lighting devices.
519. Dr. Emil Collett.—Process for concentrating dilute nitric acid.
520. Sidney Thomas Hollinghume and Harry Percy Hudd.—Self-coupling buffer for use on railway rolling stock.
521. Arthur Cleveland Walter.—Improved washing machine for the recovery of diamonds and the like.
522. Harry Seymour Marsh and Victor Emilius Hansen.—Improvements in machines for making long filler cigars.
523. James Dawson & Son, Ltd., and Albert Waddington.—Improvements in belting.
524. Caleb William Roberts and David Walter Cooper.—Improvements in and relating to portable closets or commodes for use in mines and the like.
525. The Consolidated Brake and Engineering Company, Ltd., and Arthur Grotyan Marshall.—Improved means for preventing the corrosion of boiler plates.
526. Alfred George Spencer.—Improvements in buffer, draw, bearing or other springs and elastic diaphragms
527. Jacob S. Sparkes.—Improvements in connection with capels or couplings for cables, ropes and for like purposes.
528. Gordon Travers Easten.—Air and water spray for preventing dust on rock breakers, machine drills or devices causing dust.
529. Emile Leperre.—Automatic diamond cutting and polishing machine.
530. John Adolf Alfred Nystrom.—Improvements in hollow building blocks and in walls made thereof.
531. Donald McLachlan.—Improvements in detachable bits for hand and machine rock drills.
532. Richard Thomas Park.—An improved differential or reduction gear.
539. Charles O'Connell.—Improvements in apparatus for recovering precious and/or other metals or precious stones from alluvial or other deposits and the like.
540. Charles Edward Benington.—Improved ambulance dividing sheet.
541. James Henry Ruthven.—Device accessory to Ruthven's combined brake buffer and automatic differential grip for safety clutches.
542. Henry Simpson.—Waterproof and fire-resisting paint.
543. Richard Astley B. de Barry.—A mechanical respirator.
544. Thomas Moxhay Hack and Edward George West.—Improvements in thrust bearings.
545. Josef Heinrich Reineke Improvements relating to calling and contact relays for weak undulating currents.
546. Societa Agganciamento Crescimbeni and Ettore Crescimbeni.—An automatic coupling for railway vehicles and the like.
547. Lamertine Cavaignac Trent.—Apparatus for treating solid bearing solutions.
548. Alfred Argles.—Improvements in apparatus for the treatment of ores or other materials for recovery of the metals therein.
549. Alexander Fraser.—Improvements in the extraction of precious metals from ores.
550. Julius Nelson Ellis.—Positive automatic steam regulator for boiler feed.
551. William George.—Improved rolling digger
552. William George.—An improved pump.
553. Alexander Stewart.—The sanitary dust bin.
554 George Anderson Robertson and Douglas Robertson.—Improvements in mills or apparatus for crushing ore and other materials.
555. Albert William Daw and Zacharias Williams Daw.—Improvements in hammer rock drills and in percussive hammers and similar tools.
556. Dr. Carlo Rossi.—Improvements in or relating to electrodes for use in the production of nitric oxide.
557. Harry Ernest Rygor and Abraham Isaacs Wiesholtz.—Improvements in safety devices for skips running in inclined shafts.
558. Ernest Loesser.—Improved apparatus for making dops for holding precious stones to be ground.
559. Ernest Loesser.—An improved dop for holding precious stones to be ground.
560. Ernest Loesser.—Apparatus for grinding and polishing precious stones.
562. John Emery Bucher.—Method of producing metals.
563. John Emery Bucher.—Improvements relating to the fixation of nitrogen.
564. John Tulip.—Improvements in the means of attaching side cars to motor cycles and the like.
565. Frederick Victor William Swanton.—Improvements in power producing apparatus.
566. James Snodgrass.—Improvements in the concentration of gold ores.
567. Charles Young Weir.—Improved haulage jockey for trucks for use in mines and the like.
568. Anthony William Richard Schieder, William Spence Wilson, and George Innes Smith.—Improvements in apparatus for a portable chute or stope box for use in underground workings of mines or the like.
569. Otto Stuhang Tonnesen.—Improved means for extracting jumpers, drills and such like.
570. Robert Blakoe.—Improvements in and connected with the wheels of cycles, motor cars and other vehicles.
571. Arthur Joseph Sequin Fisher.—Improvements in percussive apparatus.
572. Fearless Brush Company, Ltd., and Alfred Gerhold.—Improvements in and relating to brushes.
573. Bertram Campbell and Travers Solly.—A new and improved clamp and nozzle holder for water spray or jet, to be used with rock drilling machines.
574. Charles Washington Merrill.—A precipitant for recovering metals from cyanide solutions.
575. Charles Washington Merrill.—Process for precipitating and recovering valuable metal-bearing materials from solutions.
576. Samuel Thomas Tregarkis.—Improved support for light power-driven hammer drills.
577. Robert Caldwell.—Improvements in means for locking skips to prevent their premature tipping.

New Companies.

The following new companies have been registered at Pretoria:—

The Camel Alluvial Diamonds, Ltd., 20 Norwich Union Buildings, Fox Street, Johannesburg; capital £4,000.

Southey & Co., Ltd., 15 Bettelheim Buildings, Simmonds Street, Johannesburg; capital £100.

The Victoria Land Company, Ltd., 9 Meischke Building, Harrison Street, Johannesburg; capital £5,000.

The Metallic and Vulcanising Paint Manufacturers, Ltd., Forest Street, Forest Hill Township, Johannesburg; capital £800.

Het Algemeene Handels Maatschappij, Beperkt, Ventersdorp, Transvaal; capital £100.

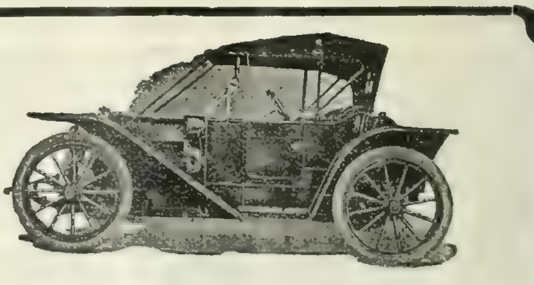
The Apostolic Faith Mission of South Africa, 45 Von Weilligh Street, Johannesburg; capital unlimited.

The Ascot Pharmacy, Ltd., Stand 182, corner of Fuller and Ascot Roads, Bertrams, Johannesburg; capital £300.

The Transvaal Clothing Manufacturers, Ltd., Stand 56, Commissioner Street, Johannesburg; capital £750.

Property Investment Company, Ltd., 86 Marshall Street, Johannesburg; capital £5,000.

Veld Fertilizer Company, Ltd., Stand 818, Siemert Road, Doornfontein, Johannesburg; capital £5,000.



The K-R-I-T Car.
4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
'Phone 1434.

Kuruman Prospecting Syndicate, Ltd., Cullinan Buildings, Simmonds and Main Streets, Johannesburg; capital £1,400.
Clyde Construction Company, Ltd., Exploration Buildings, Commissioner Street, Johannesburg; capital £3,500.
Trehair, Ltd., Stand 220, Hay Street, Turffontein, Johannesburg; capital £500
Volant Syndicate, Ltd., 29-35 Jeppe Arcade, Commissioner Street, Johannesburg; capital £2,500.
The Co-operative Association of South Africa (Boksburg and District), Ltd., at the office of Messrs. Caudie & Gifford, Market Square, Boksburg; capital £2,000.
Phoenix Vinegar and Condiment Co., Ltd., 200 Main Street, Johannesburg; capital £1,500.
J. Herzberg, Ltd., 16 Meischke's Buildings, Harrison Street, Johannesburg; capital £300.

FOREIGN COMPANIES.

Taranal Agency, Ltd., care of J. G. Jarvis, Sauer's Buildings, Loveday Street, Johannesburg; capital £10,000.
The Crocodile Valley Tobacco Growers, Ltd., care of J. J. Hoyle and J. A. Moodie, Mutual Buildings, Harrison Street, Johannesburg, capital £9,000.
Cape-Cairo Oil Development Co., Ltd., care of A. W. Speyer, 77 Stock Exchange Buildings, Johannesburg; capital £50,000.
Klinkenberg Estates Company, Ltd., care of F. Garfoth, Wagendrift, near Premier Mine; capital £25,000.
Buffelsdrift Diamond Mines, Ltd., care of T. E. Duckles, Exploration Buildings, Johannesburg; capital £30,000.
Harrisdale Diamonds, Ltd., J. S. Richardson, Transvaal Bank Buildings, Fox Street, Johannesburg; capital £20,000.

INCREASES OF CAPITAL.

Sandbult Diamond Syndicate, Ltd., Johannesburg; capital increased from £12,000 to £14,800.
Atbur, Ltd., Piet Retief; capital increased from £8,000 to £9,600.
Colox Paint Company, Ltd., Johannesburg; capital increased from £6,000 to £7,000.
William Barker, Ltd., Johannesburg; capital increased from £250 to £2,250.

VOLUNTARY LIQUIDATION.

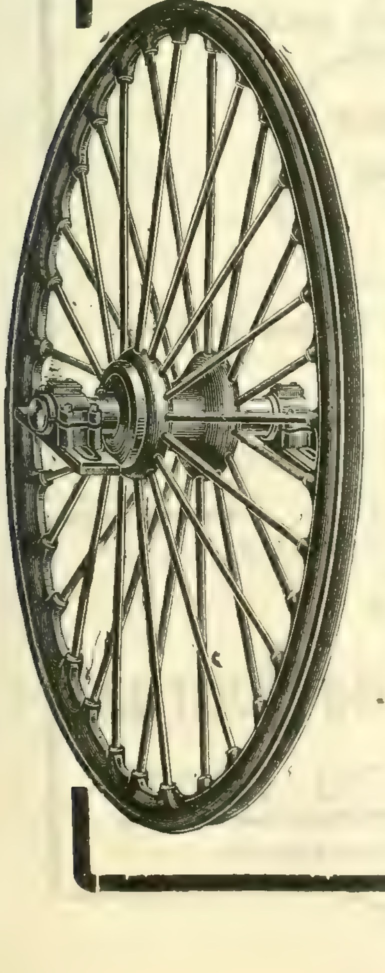
Houtpoort Mining Estate Syndicate, Ltd., Johannesburg.
Grampian Mines, Ltd., Johannesburg.
Pentagon Syndicate, Ltd., Johannesburg

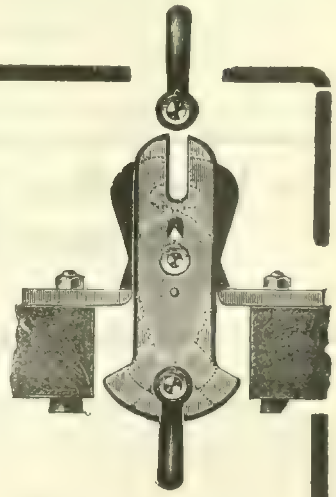
Crown Diamonds.

The following was the result of operations at the Crown Diamond mine for the month of November, 1913:—17,674 loads washed, yielding 1,721¼ carats.

Zaaiplaats Tin.

The quarterly report of the Zaaiplaats Tin Mining Company, Ltd., states:—Fifteen stamps ran 68·7 days, crushing 8,183 short tons, the duty per stamp being 7·94 tons per 24 hours. In addition, 375 short tons of residues were re-treated. The output for the quarter amounted to 324 long tons of concentrates, assaying 70·3 per cent. metallic tin. The treatment of accumulated slime was suspended for a portion of the quarter in order to conserve the maximum quantity of water for milling purposes. The estimated profit for the quarter amounted to £23,945 17s. 11d., made up as follows: Estimated profit for the three months' operations, £24,248 6s. 11d.; less adjustments of estimated values of shipments to July 29, 1913, £302 9s.; profit declared for the quarter, £23,945 17s. 11d. Exploratory work was very successful in No. 5 section, exposing a valuable branch pipe and also a shoot of ore upon a fissure. The fissure is being raised upon with satisfactory results. No. 6 section: In a cross-drive from No. 6 fissure several large pockets of ore were encountered. These have not affected the value of the fissure ore being driven upon. The main ore body has increased in size and strength. The upper portion of No. 6 incline shaft was equipped with a hauling way preparatory to the exploration of this section on a larger scale than hitherto. Development in No. 13 section continues satisfactory. Several large lenzes branched from the main ore body during the quarter. Of these the most important are on the 1st level N.W. and beneath the 2nd level N.W. Work is being done in the upper portion of this section on indications similar to those which preceded the valuable discovery of last December. 13,209 tons of ore were mined and disposed of as follows: Apportioned to Transvaal Consolidated Land Co., 1,258 tons; waste sorted, 1,696 tons; added to the reserve dumps, 2,072 tons; sent to mill, 8,183 tons; total, 13,209 tons. All regular prospecting was suspended in favour of alluvial washing. Only a limited amount of washing was done, owing to the advisability of conserving all available water for milling purposes. The results obtained from 1,000 tons treated were highly satisfactory. The bagging shed was removed to a new site adjacent to the dressing floor, and a new store was erected in its place. Two additional alluvial washing plants were erected, making a total of three plants, with a combined capacity of 250 tons per day. No expenditure on capital account was incurred during the quarter. The drought was broken on October 12, and an ample supply of water for all purposes is now available. Slimes and alluvial treatment was suspended for a time, and this, coupled with the temporary arrangements for the conservation of water, were completely successful, enabling the mill to run full time throughout the period of drought. The average number of natives at work for the quarter was 672. The prevailing labour shortage is being keenly felt, but is not expected to affect the normal monthly results. It is anticipated that a plentiful supply will be forthcoming during December. An interim dividend of 25 per cent. (1s. 3d. per share) was declared by the board of directors, payable to all shareholders registered at the close of business on October 31 last. Warrants in payment of this dividend will be despatched to shareholders early in December.





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Witwatersrand Deep, Limited.

(INCORPORATED IN THE TRANSVAAL.)

DIVIDEND NO. 16.

NOTICE IS HEREBY GIVEN that a Dividend of Twenty per cent. (20%) for the six months ending 31st December, 1913, equal to 4s. per share, has been declared, payable to Shareholders registered on the 31st December, 1913. Dividend Warrants will be paid out as soon as practicable after the receipt of the London Transfer Returns to that date.

Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on presentation of Coupon No. 16 at the London Office of the Company, Salisbury House, London Wall, E.C.

The Transfer Registers will be closed from the 1st to the 6th January, 1914, both days inclusive.

By Order of the Board,

H. G. L. PANCHAUD,
Secretary.

Head Office, Johannesburg, 10th December, 1913. 13799

Consolidated Main Reef Mines and Estate, Limited.

(INCORPORATED IN THE TRANSVAAL.)

DIVIDEND NO. 11.

NOTICE IS HEREBY GIVEN that a Dividend of Five per cent. (5%) for the six months ending 31st December, 1913, equal to 1s. per share, has been declared, payable to Shareholders registered on the 31st December, 1913. Dividend Warrants will be paid out as soon as practicable after the receipt of the London Transfer Returns to that date. Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on presentation of Coupon No. 8 at the London Office of the Company, Salisbury House, London Wall, E.C.

The Transfer Registers will be closed from the 1st to the 6th January, 1914, both days inclusive.

By Order of the Board,

H. G. L. PANCHAUD,
Secretary.

Head Office, Johannesburg, 10th December, 1913. 13798

The Village Main Reef Gold Mining Company, Limited.

(INCORPORATED IN ENGLAND.)

DIVIDEND NO. 26.

NOTICE IS HEREBY GIVEN that a Dividend of Thirty-five per cent. (Seven shillings per share) has been declared, payable to all Shareholders registered in the Books of the Company on the 31st December, 1913.

The Local Transfer Books of the Company will be closed from the 1st to the 6th January, 1914, both days inclusive.

Dividend Warrants in favour of South African Registered Shareholders will be payable in Johannesburg on or about 31st January, 1914.

By Order of the Local Board of Directors,

RAND MINES, LIMITED,
Local Secretaries

S. C. STEIL,
Joint Secretary.

The Corner House,
Johannesburg, Transvaal, 11th December, 1913. 13791

Phone 1801. Box 2415, Johannesburg.

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Sole Agent LONDON PHOSPHOR COPPER & BRONZE CO

Durban-Roodepoort Gold Mining Co., LIMITED

(Registered in England).

NOTICE is hereby given that a Seventy-ninth (79) Interim Dividend of fifteen per cent. (15 per cent.), equal to 3s. (three shillings) per share, has been declared payable on and after the 20th December, 1913.

Holders of Shares to Bearer should present Coupon No. 79 for payment of the above 3s. (three shillings) per share at the Standard Bank of South Africa, Ltd., Johannesburg Branch, on and after the 20th December, 1913.

W. A. MARTIN,
W. MACFARLANE, } Local Directors,
L. CLARENCE,

Johannesburg, 21st November, 1913.

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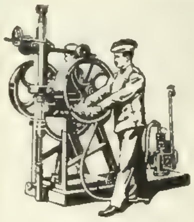
"VULCAN"



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Notes and News.

The Ceres Oil Problem. The full report made by Mr. E. H. Cunningham-Craig will, we learn from an authoritative source, be published in due course in Blue Book form for the information of Parliament. In the meantime, extracts relating to certain places have been sent privately for the information of those particularly concerned. With regard to the prospects at Bailies Gat, near Ceres, Mr. Cunningham-Craig says, *inter alia*:—"In the last few years several reports have been written on the subject of oil in this part of the country, and the farm of Bailie's Gat has received special attention on account of an outbreak of gas; the presence of marine fossils in the Bokkeveld beds in the neighbourhood, and ferric hydroxide films on the water in swampy land have been adduced as confirmatory evidence. The only report of note, however, is a recent one by Mr. J. E. Mills Davies, who describes the geological structure excellently, and while not holding out any definite hopes of petroleum being discovered, advocates the careful investigation of the gas exhalations." Mr. Cunningham-Craig attributes the gas to marshy exhalations, but it may be added that Mr. Dalton, who visited the property some years ago on behalf of Sir Boverton Redwood, was of opinion that the point was not certain. In order to investigate the question, Mr. Mills Davies advised the putting down of a comparatively inexpensive test borehole under conditions which should give definite information on one side or another. This the board of the Consolidated Oil Fields of South Africa, Ltd., agreed to, and the borehole in question is now in progress. The contractor reports that the hole is down 115 feet, and that there are strong indications of gas in the hole.

* * * *

Sir Lionel Phillips. The latest bulletin with regard to the condition of Sir Lionel Phillips is most reassuring, and his position is daily improving. During the week many notable tributes have been paid to his popularity and the esteem in which he is held by the whole community. In proposing the toast of "The Governor-General" at the annual dinner of the South African Institute of Electrical Engineers, the other night, Mr. Bernard Price, vice-president, who presided, said he was sure that he was expressing the thoughts of all of them when he said that Sir Lionel Phillips was one of the very last men that they should have expected to be singled out for an attack of that kind. He was confident that they would wish him to express on their behalf their sincere sympathy with Sir Lionel, Lady Phillips, and their relatives, and, in common with all interested in the mining industry, he would like to express their deepest regret that such a terrible occurrence as that of Thursday should have caused Sir Lionel Phillips to be absent from that gathering. They hoped that he would make a speedy recovery. The question of postponing the dinner had been considered, but, in view of the favourable bulletins, the council felt that Sir Lionel Phillips himself would have been the first to say that they should make no change in their arrangements. H.E. Lord Gladstone associated himself with all Mr. Price had said as to the infamous outrage. Mr. Malan, the Minister of Mines, on behalf of the Government and himself, joined with the chairman and His Excellency in the sympathetic words that had been said as to Sir Lionel Phillips, who, he hoped, would have a speedy recovery.

* * * *

St. John Medals for Bravery. Mr. E. C. Lowe, local secretary of the St. John Ambulance Association, has been advised that at a meeting of the Chapter General, Sub-Prior Viscount Knutsford, P.C., G.C.M.G., presiding, it was unanimously decided to award the silver medals of the Order of the Hospital St. John of Jerusalem to David Mitchell and Simon Terwee for their bravery in a gassing accident in January last at the Main Reef West mine. The accident took place in a drive in No. 4 level, as a result of a box of explosives becoming ignited. Ten natives were under the charge of an Australian named Arthur Smith, and most of the members of the working party had become affected before the cause of the trouble was discovered. Mitchell, a shift boss, and Terwee, a stoper, went to the assistance of the party in peril, and managed to get them out. Smith was in a bad way, and was sent to the Johannesburg Hospital, where he died the same afternoon. Three of the ten natives, who were rescued later, succumbed to the effects of the fumes. Mitchell and Terwee were also gassed, but after some days got over the effects. The circumstances of the case were brought to the notice of the head authorities of the Order of St. John by the local body, with the result that the bravery of these two men has been recognised by the awarding of the coveted medals. Arrangements will be made at a later date for the formal presentation of the awards.

* * * *

The Corner House Dividends.

It is not yet possible to state definitely the total dividend harvest of the Witwatersrand for 1913, as certain companies which may be expected to announce distributions have not yet published their declarations. One can, however, give figures for the Central Mining and Investment Corporation, the premier group of the Witwatersrand which distributes about 50 per cent. of the money paid out by the mines of the Main Reef series in the form of profits. For these companies the total amount paid out is £4,074,094, as compared with £3,927,678 declared by the same companies for 1912. Taking the companies individually four mines, the Bantjes, Durban Roodepoort Deep, Robinson and Village Deep, distribute less in respect of the 1913 operations than they did last year. Two subsidiaries, the Crown Mines and Village Main Reef, distribute the same amounts as last year, and the remaining seven companies, City Deep, Ferreira Deep, Geldenhuis Deep, New Modder, Nourse Mines, Modder B. and Rose Deep, announce increases. Amongst the most noteworthy advances are those of the Modder B. (£315,000 as against £140,000), the Nourse Mines (£234,549 as compared with £124,173), and the Ferreira Deep (£490,000 as against £402,500). The Nourse Mines aggregate is much greater by reason of the declaration of three dividends this year instead of two in 1912, whilst the Ferreira Deep's aggregate is increased by reason of the inclusion of the Ferreira's profits this year.

* * * *

The Labour Outlook.

The native labour position is, at last, on the mend. The present month is the first since before the strike—indeed, since last season—that recruiting has made up for current wastage. The outlook is improving, and it is hoped that early in the New Year much leeway will be made up.

* * * *

Globe and Phoenix.

The verbatim report of the recent Globe and Phoenix meeting has several interesting features that have hitherto passed unnoticed. After the return of the directors from their visit to the mine, it is naturally interesting to read the remark of the chairman, Earl Russell, that "they (the visiting directors) found that this was one of the best managed mines in the world, and they state that they have practically no criticism to make upon Mr. Haddon's management, which they found capable, energetic and economical"! In the drive from the 19th to 20th level they have 278 dwts. over 30 inches, and in the winze 415 dwts. over 45 inches! The directors seem to have settled their differences at last. They have cut their fees down to a paltry £400 a year each!

* * * *

A Nairobi Gold Mining Company.

The Ngasamo Gold Mining Company, Limited, has recently been floated at Nairobi with a capital of £35,000, of which £25,000 is purchase price and £10,000 working capital. It has been formed to acquire from the Equatorial Exploration Company, Limited, the Ngasamo gold mine at Ngasamo, German East Africa, with the five-stamp mill, engine, boiler, crusher, and the usual mining plant. According to a report by Mr. Arthur Jefferies, the ore averages 1 oz. per ton, and he considers it a sound and payable property. The working expenses are estimated at 10s. per ton, about £12,000 has already been extracted from the mine, eleven shafts have been sunk on the property, and there are about 5,000 tons of accumulated tailings, valued at £7,000 gross. Local opinion considers that the company has excellent prospects of success, especially with such directors as Mr. W. M. Nightingale, Mr. T. A. Wood, Mr. Alan Thompson, and Mr. V. M. Newland, who are all well-known business men of Nairobi.

* * * *

An Enquiry from America.

An American firm has made an application to the Government Mining Engineer to be put in touch with a supplier of 10 tons of rutile for the finest pottery work. It must contain at least 94 per cent. of titanium oxide and not less than 2 per cent. of iron oxide. Application should be made to the Government Mining Engineer's Office, New Law Courts.

* * * *

The Shamva.

In his speech from the chair at the meeting of the Mayo (Rhodesia) Development Company, Mr. C. F. Rowsell referred in very enthusiastic terms to the large holding which that company holds in the Shamva Company. "I do not know," remarked Mr. Rowsell, "whether you fully realise the importance of the Shamva mine. Personally, I cannot help considering the Shamva mine one of the biggest mining discoveries that has been made for many years, and it is very difficult to realise the immense size of the ore body which has been opened up in that mine. Take the first level, for instance: Here they have a length of 920 ft. and an average width of 110 ft. Now, when you recollect that in an ordinary proposition a width of 5 ft. is looked upon as very substantial you will see what an enormous proposition they have in the Shamva with its width of 110 ft. I think that Bishopsgate is about 80 ft. wide, so that you have to imagine a stope nearly half as wide again as Bishopsgate, and 920 ft. in length. This, of course, is a remarkable deposit. I have no doubt you are acquainted with the fact that at the present time they have in the mine ore reserves amounting to 2,319,752 tons, valued at 5 dwts. This valuation of 5 dwts. has been checked by actual trial crushings, and it has been proved that the average as proved by these trial crushings, which were made in the most careful manner, were in excess of the estimate. We have also been able to satisfy ourselves that the cost of stoping will be well within the estimate which has been made of this portion of the costs, and I have every hope that the other estimates which have been made will prove to be equally conservative. At the last meeting of the Shamva Company, the chairman (Mr. Birkenruth) stated that a dividend of 40 per cent. might be anticipated. Knowing Mr. Birkenruth as I do, I think you may take it that this is both a cautious and conservative estimate. Crushing will commence at the mine about January, but it will not be possible to form a correct judgment as to what the Shamva can do until after crushing has been carried on for several months, as undoubtedly in operating so great a proposition it will take a little time to settle down to regular work. I think, however, in the early part of next year we may look forward to seeing the Shamva earning monthly profits on a very satisfactory basis indeed, and that our large holding in this company will appreciate very considerably in value."

* * * *

First "All-Rail" Copper Shipment from Messina.

The first shipment of copper from Messina direct by rail to Delagoa Bay was consigned from the mine on the 16th inst. The shipment was made by construction train to Lilliput, about 25 miles from the mine, and from there onwards was carried over lines open to ordinary traffic. We need not emphasise the point that completion of the railway to Messina means the commencement of a new era for the copper company. Recent articles appearing in this journal have dealt at length with the new outlook for the Messina company created by the possession of effective transport facilities. There will be a grand opening celebration at the mine at an early date, when Mr. John P. Grenfell, the original locator of the Messina property, will be present.

Rooiberg Dividend.

The Secretary of Rooiberg Minerals writes as follows:— The attention of my board of directors has been drawn to a Press telegram reading as follows: "In view of the declaration of 10 per cent. dividend by the Rooiberg Minerals and Development Company, Ltd., to-day, a number of Pretoria shareholders have wired to the chairman of the company as follows: 'Pretoria shareholders dumb-founded Rooiberg dividend. Can you offer any explanation?' It is understood that a protest meeting is being called by shareholders here." I am instructed to state that in declaring an interim dividend on the operations of the company for the first half of the fiscal year 1913-14, in the opinion of the board of directors there is every reason at the present juncture for a careful policy being pursued and a strong financial position being maintained. The average sale price of tin for 1910-11 was £183 per ton; for 1911-12, £197 per ton; for 1912-13, £218 per ton, and for July to December, 1913, £183 8s. per ton. The present price is £172 2s. per ton. The board's advices as regards the immediate future are such that there is no assurance that the price will not go lower. If the price improves it will be reflected in the amount available for distribution to shareholders at the end of the financial year. The profit as declared from July to November, 1913, including the estimate for December, is £33,782, against which there is capital expenditure as declared for July to November, including estimate for December, £8,209; profit tax, say £2,000; 10 per cent. dividend, £18,000; balance unappropriated, £5,573. I am instructed to request you kindly to grant the courtesy of your columns for the publication of this letter.

* * * *

E.R.P.M. Changes.

Our recent announcement regarding E.R.P.M. changes is now officially confirmed. Mr. H. Ross Skinner relinquishes his duties as superintending engineer of the East Rand Proprietary Mines, Ltd., at the end of the present year, and Mr. W. T. Anderson, the general manager, has been appointed to succeed him. Mr. E. C. J. Meyer, at present assistant general manager, has been appointed manager in place of Mr. W. T. Anderson. Mr. Ross Skinner will retain his seat on the board of directors, and during Mr. Anderson's absence on leave next year he will act as superintending engineer. A dividend of 12½ per cent. (2s. 6d. per share) has been declared for the half-year ending December 31, payable to all shareholders registered on December 31.

* * * *

Mr. Leopold Albu on the Labour Outlook.

Judging from the brief cabled reports, Mr. Leopold Albu seems to have made a very interesting reference to labour questions at the Van Ryn Estates meeting, on Wednesday, in London. He praised the efforts of the Recruiting Corporation which had enabled work to be carried on under more normal and more profitable conditions. He said they had looked forward to great developments in the industry and a gradual return of prosperity and confidence which was of such vital importance to the whole of South Africa. This hope was suddenly dashed to the ground by the ill-advised and unjustifiable strike. It was poor consolation to know that the miners themselves suffered a fair share of the consequences when they considered the incalculable loss to the industry and the whole of South Africa. He hoped the white workers would thoroughly appreciate the lesson. He emphasised the importance of Kaffirs, and warned the miners that if the Kaffir labourers were frightened away from the mines by ill-advised and selfish action, the white miners would surely destroy their own means of livelihood.

* * * *

Christmas Arrangements.

The fact that Christmas Day falls this year on a Thursday necessitates a change in our publishing arrangements. Next week the paper will be published on Wednesday, the 24th inst. The next issue thereafter will come out on Saturday, January 3rd, 1914.

TOPICS OF THE WEEK.

ELECTRICAL ENGINEERS FOREGATHER.

The third annual dinner of the South African Institute of Electrical Engineers was producfive of a notable crop of important speeches. The function was honoured by the presence of His Excellency the Governor-General, the Minister of Mines and Colonel Gorgas. Mr. Bernard Price was in the chair, in the absence of the President, Mr. J. W. Kirkland, who has been called to America on business. Advantage was taken of the occasion to express sympathy with Sir Lionel Phillips in the wanton attack made upon him, and Lord Gladstone, Mr. Malan and Mr. Price spoke feelingly on the subject. Lord Gladstone paid some high compliments to the electrical engineering profession, and Mr. Price, in reply, referred with pardonable pride to the vastness of the undertaking that to-day represented the main centralization of electrical power supply on the Rand. Colonel Dalrymple, in a characteristic speech, demonstrated that those who strive for low working costs on the Rand were working in the public interest to prolong the life of the industry and benefit everyone. Mr. Calder made out a strong case for the amalgamation of the Rand engineering societies, and more will, doubtless, be heard of the suggestion. The honours of the evening, however, fell to Mr. Malan, who dealt at length with his pet subjects of technical education and industrial leglislation. To his remarks on the latter, reference is made elsewhere. His plea for the young South African engineer was not less noteworthy. Taking a larger view than that of electrical engineering on the Witwatersrand, Mr. Malan said "We sometimes forget that we are advancing in South Africa. We are accustomed to belittle ourselves and to hear other people speak, not always with appreciation, of the efforts which are put forward by young South Africa to solve its problems. It has been said—and I think to a certain extent it has been rightly said—that we in South Africa have neglected the technical part of the training and development of our people, but that reproach, if it had been a reproach in the past, is very fast disappearing. We have in full working order in South Africa two schools for the training of engineers. We have the School of Civil, Mechanical and Electrical Engineering in connection with the South African College at Capetown, an institution which is turning out some very good material indeed, and from which all Government departments of the country are drawing very largely now for their engineering talent. Then here in Johannesburg you have the School of Mines and Technology. That institution has gained for itself a very warm place in the hearts of the people of Johannesburg. The men who are being trained here as mine managers, mine captains or engineers are taking every day a more and more prominent place in the intellectual and industrial life of the community." Continuing, Mr. Malan said he thought that the mining industry deserved credit for the way in which it helped young South Africans who had completed their studies at the schools of engineering. He hoped that the mining industry would continue to give that practical illustration of their desire to assist the Government in connection with the training of young South Africans for technical departments. Mr. Malan's remarks made a deep impression, and the Minister need have no fear that young South Africans will find on the Rand anything but a fair field for the exercise of their undoubted aptitude towards engineering in all its branches. Certainly the many members of the local engineering world embraced by the important and growing institute he addressed on Friday evening can be counted on to repay in some measure the debt they owe to South Africa by giving practical proof, where possible, of their sympathy with the spirit of Mr. Malan's remarks.

GOVERNMENT AND LABOUR DISPUTES.

Mr. Malan, speaking at the annual dinner of the South African Institute of Electrical Engineers last Saturday night, announced that the new programme of industrial legislation about to be launched by the Government aimed less to stop strikes than to prevent their occurrence. He also appealed to the community to come forward with suggestions on the subject, and he did not overlook the fact that the Government was, in this matter, embarking on a very ambitious course. The draft Bills embodying the proposals of the Government are to be issued in the next few days, and further comment may be postponed to their appearance. In this connection, it is noteworthy that Mr. Buxton, the President of the Board of Trade, has informed the public that the Board has abandoned its old policy of laisser-faire in regard to trade disputes. He indicates the possible action of the Government with the object of checking industrial strife—they are in favour of agreements to be honourably kept, against compulsory arbitration or compulsory enforcement of agreements, which provide a breathing space or opportunity for exhausting all peaceful means before resorting to a strike or lock-out, and make bona-fide agreements applicable to the whole of a trade after inquiry by an impartial authority. The recommendations, which appear to be based chiefly on the Report of the Industrial Council, are somewhat in the nature of an enigma. Mr. Buxton pins his faith on the value of a breathing space, on the opportunity being given to exhaust all peaceful and reasonable means before resort is had to a strike or lock-out. But what about the temper of the men? They have, and will continue to have, the awkward habit of leaving work without notice. In the recent disputes on the Ship Canal, in Liverpool, and in Dublin they did not bother about breathing space—they went on strike. Moreover, the recommendation with regard to agreements has a flavour of the whimsical. It is urged that industrial agreements should be honourably kept, and yet compulsory arbitration, or the compulsory enforcement of agreements cannot be entertained. Consequently, if so disposed, the workmen may break their agreements at will, without penalty, leaving the employers in the lurch. Mr. Buxton's distinction between agreements and bona-fide agreements to be applicable to a whole trade is, to say the least, a little bewildering, for surely an agreement of any sort, if it is worth the making at all, and not mere waste-paper, should be bona-fide. It is to be hoped that Mr. Malan will not stultify himself by any slavish imitation of Mr. Buxton's proposals in this respect.

TWO COMMISSIONS ON COST OF LIVING.

Two Government Commissions, the one taking evidence *in camera*, the other in public, are now investigating the cost of living in South Africa—a question which may be said to be at the root of many others. Already the Economic Commission, sitting in private, is known to have collected a vast amount of data on the subject, and the proceedings of the Railway Commission, as reported in the papers, in that regard, appear continually to overlap those of the sister body. As far as the Rand is concerned, we do not doubt that both Commissions will come to the inevitable conclusion that rent is the biggest item in our cost of living, and that, railway rates on building materials are, in the last analysis, mainly responsible for the high rents. Other contributory factors are, of course, not to be ignored. Nearly every civilized country in the world has, of late years, been concerned about this question of cost of living, and amongst others the United States, Great Britain, New Zealand and Rhodesia have had important Commissions investigating the matter. In Great Britain the question was minutely examined by a Royal Commission, whose voluminous report attracted much attention a few months ago. In New Zealand the subject has been explored by a Commission of experts, and their report is an illuminating document. Some salient points in the findings of the New Zealand Commission may here be noted. The Commissioners estimated the increase in the cost of living in that Dominion, as measured by the index of wholesale food prices, as having been 21 per cent. in the course of 17 years. Making allowance for changes in the qualities of the articles consumed, the actual increase in cost of living was held to be at least 16 per cent. It was pointed out that food amounted to nearly 35 per cent. of a family's total expenditure, and that the prices of foodstuffs had risen very much more than the average level of prices. The Comtotal expenditure, and that the prices of foodstuffs had risen less in New Zealand than in any other country from which trustworthy records were obtainable. It was found that the New Zealand food prices move in sympathy with those of the United Kingdom; and we imagine that this be no less true of South Africa, seeing that so many of our articles of food and drink are imports from the Mother Country. The greatly increased rate of gold production since the middle nineties is declared to have been a chief factor in the depreciation of the purchasing power of money. The Commissioners think that when the output of gold begins to diminish we cannot expect lower prices at once, because the influence of gold upon prices does not depend on whether the output is itself increasing or decreasing, but really on the quantity of gold in circulation, relatively to other factors. Their opinion is that the rising tendency in prices may continue for some ten or fifteen years, by which time we may be near an era of falling prices. The quantity of gold produced or in circulation is not the sole factor, although an important factor, in causing the upward trend of prices. There has, for one thing, been a levelling-up in the standard of living. It is interesting to observe what the New Zealand investigators have to say upon the effect of their export trade upon domestic prices. They state that the development in export business has sent up prices in New Zealand itself. Yet it has brought about greater general prosperity in the Dominion. They maintain that if there were no outside market for New Zealand produce, the supply would greatly exceed the demand, prices would fall to an unprofitable level, and the reduction would have a disastrous effect upon town and country population alike. The truth that tariff legislation is not always a determining factor in regulating prices is exemplified by the statement of the New Zealand Commissioners that the period of rising prices has synchronised with the policy of tariff reductions. Nevertheless, they urge, as a means for reducing the cost of the necessaries of life, that the duty on all foodstuffs and indispensable commodities used by primary producers should be abolished. Turning to Rhodesia, we may recall that it is now nearly two years since the Administration appointed a Commission composed of Sir Edgar Walton, Messrs. George Mitchell, F. Eyles, M. E. Cleveland and E. C. Baxter to inquire into the question of the cost of living in Rhodesia. The report signed by the members of the Committee, excepting the Chairman (Sir Edgar Walton) was issued recently, and a summary of its recommendations is of interest. Inter alia, it is shown that the cost of South African produce to the Rhodesian consumer sometimes exceeds by 100 per cent. the prime cost, although the expenses of importation are limited to railage and forwarding charges. Imported necessary foodstuffs, soap, candles, etc., cost the consumer less than double the prime cost, and often exceeds that proportion. Building material and furniture cost three times the prime cost. The main factor governing these prices is the charge for railway haulage, which is greater than the gross total for ocean freights, duty, and other charges, and, in fact, is often two or three times the amount of all these charges. The heaviest item is rent, which discourages marriage. Expenditure on luxuries, particularly liquor, sport, and entertainments is high. amongst all classes. Two factors determine and maintain the high cost of living: (1) The small proportion of necessary commodities produced locally; (2) the long and expensive railway route over which imported articles are hauled. The true root cause of both is one and the same —the smallness of the population and its stationary position as to numbers. Anything, the Committee concludes, that would bring a rapid influx of population would immediately react upon railway rates and local production. The Rhodesian problem, it will be seen, is different from that of the Rand, to the degree that the latter is even more heavily penalized by railway rates. If one or both of our Commissions can strike a blow for reform in this direction their labours will not have been expended in vain.

THE YEAR'S DIVIDENDS.

Declarations for Transvaal Gold Mines Received up to the Time of Going to Press.

HEREUNDER we give a table setting forth the dividends declared by Transvaal gold mining companies for the current year. In regard to declarations for the last six months of 1913 there are stated the returns available up to the time of going to press.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount	Total Distribution for Year.	Amount Half Year, June, 1912.	Amount Half Year, Dec., 1912.
THE RAND.								
CENTRAL MINING AND INVESTMENT CORPORATION.								
Bantjes Consolidated ...	£502,306	June	5	1s.	£25,115	£37,672	£25,115	£31,369
	502,306	Dec.	2½	6d.	12,557			
City Deep	1,250,000	June	10	2s.	125,000	218,750	—	156,250
	1,250,000	Dec.	7½	1s. 6d.	93,750			
Crown Mines	940,106	June	55	5s. 6d.A	517,058	1,034,116	517,058	517,058
	940,106	Dec.	55	5s. 6d.	517,058			
Durban Roodepoort Deep..	440,000	June	5	1s.	22,000	22,000	22,000	22,000
Ferreira Deep	980,000	March	25	5s.	245,000	490,000	182,000	220,500
	980,000	Sept.	25	5s.	245,000			
Geldenhuis Deep	585,753	June	10	2s.	58,575	102,507	58,575	29,287
	585,753	Dec.	7½	1s. 6d.	43,932			
New Modder	1,400,000	June	15	12s.B	210,000	420,000	175,000	210,000
	1,400,000	Dec.	15	12s.	210,000			
Nourse Mines	827,821	Jan.	10	2s.	82,782	234,549	82,782	41,391
	827,821	June	10	2s.C	68,985			
	827,821	Dec.	10	2s.	82,782			
Modderfontein B.	700,000	June	20	4s.	140,000	315,000	-	140,000
	700,000	Dec.	25	5s.	175,000			
Robinson	2,750,000	June	8	8s.D	220,000	412,500	343,750	275,000
	2,750,000	Dec.	7	7s.	192,500			
Rose Deep	700,000	June	25	5s.	175,000	297,500	157,500	157,500
	700,000	Dec.	17½	3s. 6d.	122,500			
Village Main Reef	472,000	June	35	7s.	165,200	330,400	165,200	165,200
	472,000	Dec.	35	7s.	165,200			
Village Deep	1,060,671	June	10	2s.	106,067	159,100	79,550	106,067
	1,060,671	Dec.	5	1s.	53,033			
COMPANIES WITH HEAD OFFICES IN NATAL, MANAGED BY THE CENTRAL MINING AND INVESTMENT CORPORATION.								
City and Suburban	1,360,000	June	7½	6s.B	102,000	204,000	102,000	102,000
	1,360,000	Dec.	7½	6s.	102,000			
New Heriot	115,000	May	35	7s.	40,250	80,500	46,000	46,000
	115,000	Nov.	35	7s.	40,250			
CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA.								
Knights Deep	643,526	June	12½	2s. 6d.	80,441	80,441	80,441	64,352
Simmer and Jack	3,000,000	June	7½	1s. 6d.	225,000	225,000	225,000	225,000
Robinson Deep	1,000,000	June	12½	2s. 6d.	125,000	150,000	150,000	125,000
	1,000,000	June	2½	6d.E	25,000E			
EAST RAND PROPRIETARY ...	2,445,897	Aug.	12½	2s. 6d.	305,736	611,472	305,736	305,736
	2,445,897	Dec.	12½	2s. 6d.	305,736			
CONSOLIDATED MINES SELECTION.								
Brakpan Mines	750,000	June	20	4s.	150,000	150,000	112,500	187,500
JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY.								
Ginsberg	210,000	June	17½	3s. 6d.	36,750	73,500	31,500	36,750
	210,000	Dec.	17½	3s. 6d.	36,750			
New Primrose	325,000	June	30	6s.	97,500	195,000	81,250	97,500
	325,000	Dec.	30	6s.	97,500			
New Unified	250,000	June	10	2s.	25,000	50,000	25,000	25,000
	250,000	Dec.	10	2s.	25,000			
Witwatersrand	469,625	June	25	5s.	117,406	234,812	74,375	74,375
	469,625	Dec.	10	5s.	117,406			
Consolidated Langlaagte ...	732,670	Dec.	10	2s.	73,267	73,267		
Glencairn	55,000	Dec.	5	1s.	27,500	27,500	- -	27,500
Van Ryn Deep	1,196,892	Dec.	7½	1s. 6d.	89,767	89,767	-	—

A Per 10s. share. B Per £4 share. C For five months ending June. D Per £5 share.
E Bonus. F Including £20,000 bonus.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount.	Total Distribution for Half Year.	Amount Half Year. June, 1912.	Amount Half Year Dec, 1912.
GENERAL MINING AND FINANCE CORPORATION.								
Meyer and Charlton ...	200,000	June	30	6s.	60,000	140,000	50,000	F70,000
	200,000	Dec.	30	6s.	60,000			
	200,000	Dec.	10	2s.	20,000			
Van Ryn	500,000	June	25	5s.	125,000	237,500	112,500	112,500
	500,000	Dec.	22½	4s. 6d.	112,500			
ANGLO-FRENCH EXPLORATION.								
New Kleinfontein	970,000	Dec.	7½	1s. 6d.	72,750	72,750	—	48,500
S. NEUMANN AND COMPANY.								
Consolidated Main Reef ...	924,364	June	5	1s.	46,218	92,436	46,218	46,218
	924,364	Dec.	5	1s.	46,218			
Wit. Deep	550,000	June	15	3s.	82,500	192,500	68,750	68,750
	550,000	Dec.	20	4s.	110,000			
Wolhuter	860,000	April	6¼	1s. 3d.	53,750	86,250	75,250	75,250
	860,000	Nov.	3¾	9d.	32,500			
ROBINSON GROUP.								
Randfontein Central ...	4,193,700	June	7½	1s. 6d.	314,527	314,527	—	209,685
Langlaagte Estate	886,500	June	7½	1s. 6d.	66,487	66,487	43,475	86,950
A. GOERZ AND COMPANY.								
May Consolidated	288,750	June	5	1s.	14,438	14,438	43,312	28,875
INDEPENDENT COMPANIES.								
Durban Roodepoort	125,000	June	10	2s.	12,500	31,250	12,500	18,750
	125,000	Nov.	15	3s.	18,750			
Jumpers	100,000	April	5	1s.	5,000	5,000	5,000	5,000
OUTSIDE DISTRICTS.								
NIGEL DISTRICT.								
Nigel	223,106	June	5	1s.	11,155	11,155	11,155	11,155
Sub Nigel	431,580	June	2½	6d.	10,789	21,579	—	21,579
	431,580	Dec.	2½	6d.	10,789			
BARBERTON DISTRICT.								
Sheba	269,738	Feb.	5	1s.	13,487	47,204	13,487	26,973
	269,738	June	7½	1s. 6d.	20,231			
	269,738	Oct.	5	1s.	13,487			
LYDENBURG DISTRICT.								
Ceylon Lydenburg	22,600	June	22½	4s. 6d.	5,085	5,085	—	6,215
Glynn's Lydenburg	170,000	Jan.	10	2s.	17,000	17,000	17,000	25,500
Transvaal G.M. Estates...	604,225	Mar.	20	4s.	120,845	241,690	75,528	105,739
	604,225	Sept.	20	4s.	120,845			

MINING MEN AND MATTERS.

Mr. R. R. Hollins is visiting Rhodesia

* * * *

Sir Abe Bailey has returned to South Africa

* * * *

Mr. F. A. Gillam has arrived at Capetown.

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The St. John Ambulance Association has opened the first of its town stations at Messrs. Loewenstein, Adams & Co., Ltd., Market Street, near the tram terminus

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The fifth annual general meeting of the S.A. Institute of Electrical Engineers will be held at the School of Mines Building on Thursday, the 15th January, 1914, at 8 p.m.

* * * *

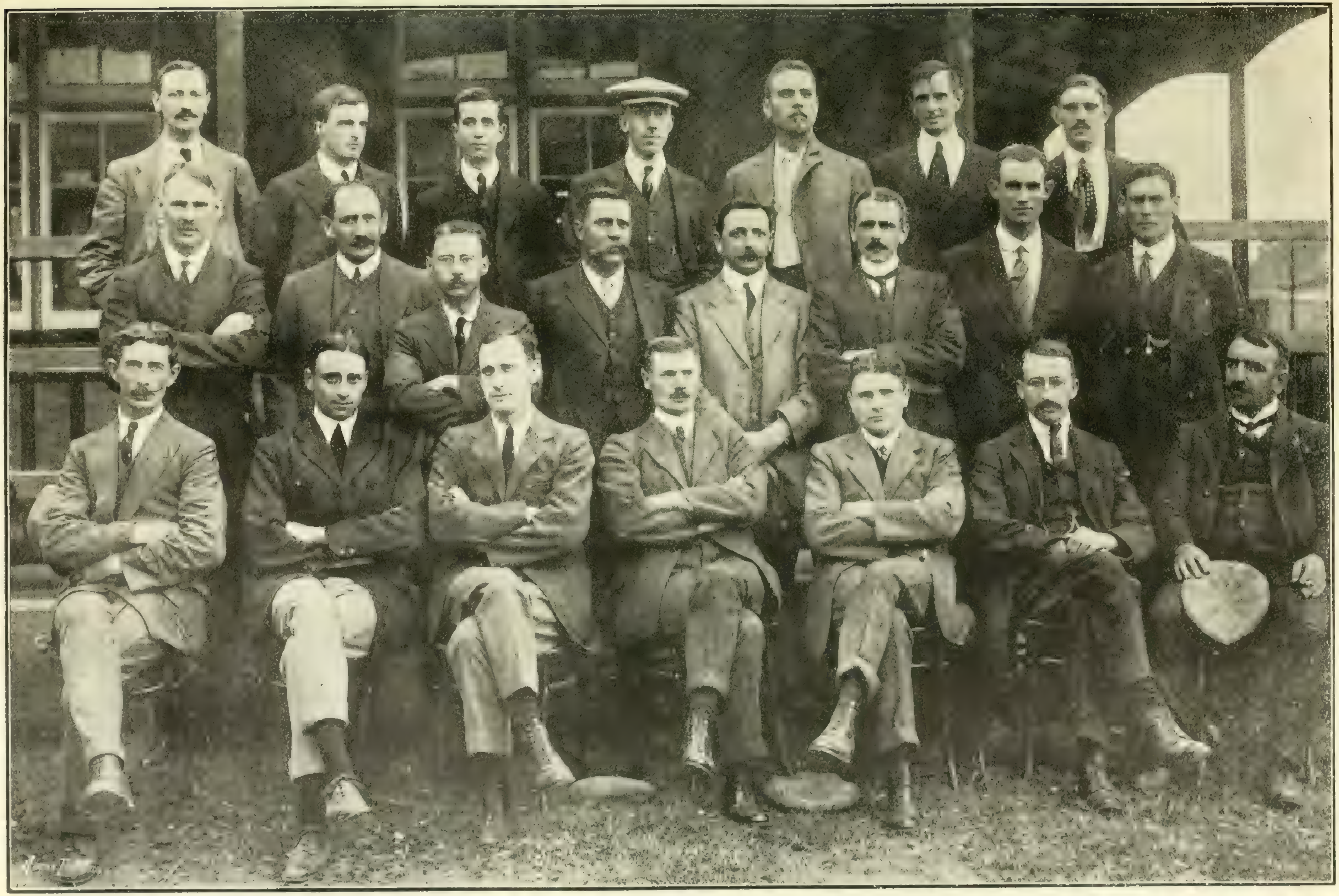
The following Mine Overseers' Certificates were issued by the Mines Department between 26th November and 10th December, 1913:—J. Kirkpatrick (Met.); P. C. Croft (Met.); J. Twinch (Met.); J. Hardy (Met.); R. C. Clague (Met.); W. A. Quince (Met.); R. H. Dale (Coal).

The Kimberley engineers, during their visit, inspected the Crown Mines, the Premier, Brakpan Mines, Apex Colliery, New Kleinfontein, Simmer Deep, and the Gold Fields Laboratory at Driehoek, and concluded their week with a complimentary dinner to Professor Yates at the Grand National Hotel.

* * * *

The third annual dinner of the South African Institute of Electrical Engineers was held at the Carlton Hotel last week. Mr. Bernard Price, the chief engineer of the Victoria Falls Power Company, and Vice-President of the Institute (in the absence of Mr. J. W. Kirkland), was in the chair. The guests of the evening were Viscount Gladstone, Governor-General of South Africa, and the Hon. F. S. Malan, Minister of Mines and Industries, while others present were Sir George Albu, Professor W. Buchanan, W. Calder, C. W. R. Campbell, Dr. G. S. Corstorphine, Colonel Dalrymple, S. Evans, Colonel W. C. Gorgas, W. L. Honnold, Norman Anstey, Mayor of Johannesburg, J. Hubert Davis, S. Imroth, Dr. D. Macaulay, M.L.A., S. McChesney, J. Munro, Captain G. M. Paget, A. E. Payn, S. R. Potter, Bernard Price, E. Richardson, J. H. Rider, H. Wallace Soutter, and J. A. Vaughan. Mr. J. W. Clarkson, the Secretary, is to be congratulated on the success of the function.

THE STAFF OF THE ROSHERVILLE POWER STATION.



Top row.—J. B. Lees (Station Clerk), A. E. Val Davies (Junior Assistant to Maintenance Superintendent), G. T. Hood (Foreman, Repair Gang) (Mechanical), W. O. Andrews (Chemist), F. Braun (Foreman, Station Maintenance) (Electrical), V. W. Russell (Assistant Storekeeper), R. Lester (Leading Boilermaker).

Middle row.—L. Morton (Shift Engineer), C. Murray (Draughtsman), P. Kersten (Foreman, Electrical Shop), F. W. B. Edbrooke (Foreman, Mechanical Shop), S. J. Eslick (Foreman Carpenter), E. J. Simkins (Shift Engineer), R. D. Larter (Fires Controller), A. R. Rae.

Seated.—A. J. Taylor (Foreman, Repair Gang) (Electrical), J. H. Odam (Assistant to Maintenance Superintendent (Electrical), D. Heslop (Assistant to Maintenance Superintendent) (Mechanical), A. Fenwick (Maintenace Superintendent), G. E. Phillips (Engineer in Charge), C. G. Cutbush (Chemist), A. Fairweather (Head Storekeeper).

RAND ORE VALUES IN DEPTH.

A Consideration of a Subject of National Importance—Revival of the Deterioration Belief by Mr. H. H. Webb.

II.—THE INFLUENCE OF POLICY.

Last week we discussed at some length the geological aspect of the problem of ore values in depth, and entered a plea for further and more searching enquiry into the origin of the gold in the banket beds, believing that further diligent research work in this direction would throw valuable light on the problem of maintenance or non-maintenance of values in depth.

The Effect of Policy.

To many the geological aspect of this question may appear as purely academic. That is not our view, but at the same time due regard must be had for the purely economic side of the problem. The first point we wish to establish is that the grade of ore milled by different mines at different periods must not be taken to represent the actual value of the ore in the mines concerned at those different periods and at increasing working depths. This is where Mr. C. O. Schmitt, in his paper entitled "Future Economies in Rand Reduction Plants," read before the Institution of Mining and Metallurgy in 1911, fell into grievous error. Mr. Schmitt, it will be remembered, prefaced his paper by a table which gave the average depth of workings and showed a decreasing screen value of ore for those depths. In regard to this table, he wrote: "There is not sufficient information available to give the average screen value of the ore for the whole of the Witwatersrand for all depths, but from the published returns of the Chamber of Mines it appears reasonable to estimate it at the figures shown in Table I." He further qualified his figures by writing: "It should be clearly understood that the screen value of ore given in Table I. is not based on any particular section of the Rand nor obtained from any definite mines, being merely the writer's interpretation of the published returns for the whole Rand, which obviously do not make any allowance for a deliberate reduction in grade, rendered possible by the low standard of working costs now prevailing. The writer, in order to show more clearly the benefits derivable from the proposed innovations, has naturally taken a low value for the ore derived from great depths, which, together with the estimated increase in mining costs, emphasizes the importance of reducing working costs on the surface. Apart from this, the value of the ore has no bearing on the subject of these notes." Mr. Schmitt, in fact, practically admits that in order to bring out the value of his economies he has assumed a state of affairs which may or may not exist. Accordingly, his table, which gives a screen value of ore amounting to 40s. per ton milled for a depth of 1,000 feet, 30s. for 2,000 feet, 25s. for 3,000 feet, 22s. 6d. for 4,000 feet, and 20s. for 5,000 feet, is merely the "writer's interpretation" of the published returns, and is a basis of reasoning which the author himself admits is not to be relied on. Having merely touched on this most important question of values in depth, Mr. Schmitt goes on to consider reduction plants. He mentions the "deliberate reduction in grade rendered possible by the low standard of working costs now prevailing." Here, we believe, is the kernel of the whole matter considered from the point of view of the student of the Rand's published returns. To what extent has the actual value of the ore in the mines been obscured by policies of working? It is impossible to give any definite answer to this, but it is notorious that in every mine there are rich and poor stopes and that the recovery per ton is determined by the proportions of ore drawn from the rich, medium or poor stopes, and that these proportions are regulated by the policy pursued by the management. Of recent years it has been the right and natural aim of the controlling Mining Houses to work as much as possible of the Rand's immense stores of low grade ore at a profit. Even in the richest mines,—*i.e.*, those propositions in which there is a proportion above the average of high grade ore—there are very large tonnages of low grade rock, and that it has been sound constructive statesmanship to reduce working expenses down to a level which will admit of the profitable working of as much of this low grade rock as possible no one will deny.

Old and New Methods.

The days of the 20-stamp battery, the 15 dwt. rock, and working costs of 30s. per ton are over and have given way to the present policy of infinitely larger milling installations and lower recoveries and less costs. The Rand would have but a very short-lived existence were the 20-stamp battery policy still indulged in. As the mines have become deeper greater capital expenditure in shaft sinking and development has been necessary; it has been found politic to exploit larger areas, to operate more extensive batteries, and to reduce working costs to a figure which admits of as much ore as possible being brought within the "pay" zone. To assume the average working depth of the Witwatersrand mines at different dates, to place opposite these assumed depths the recovery per ton of all the mines declaring their returns to the Chamber of Mines at those different dates, and then, because the average of the recoveries is a declining one as the years go by, to assume that a deterioration of value in depth is proved, is simply to ignore the essential principles of the policy laid down in the above. As already stated, it is impossible to define the extent to which policy has obscured the actual value of the ore in the banket beds at different depths. But it should, at any rate, be patent to an unbiassed enquirer that the gold contents of the banket beds at varying depths cannot be arrived at by Mr. Schmitt's method of "interpretation."

Mr. Denny's Views.

Mr. H. S. Denny, who is also a disciple of the deterioration creed, recently wrote: "This expression 'as depth is attained' in itself, however, requires some explanation, for it must not be understood that it is intended to mean that the first hundred feet must necessarily be richer than the eighth hundred feet. There are many cases, of course, where this was so, but this is not the argument. It is in dealing with the Main Reef series as a whole, and dividing this area on the dip of the series into three parallel zones of 2,000 ft. each in width, the first zone extending, say, from the outcrop to 2,000 ft., the second from 2,000 to 4,000 ft., and the third from 4,000 to 6,000 ft. that I would prefer to take as my basis, explaining at the same time that this classification is more or less arbitrary, and to be only taken as a generalization." Mr. Denny asks the question: "Would the average grade of the ore disclosed in the known developed mines as arrived at by a 5 ft. sectional sampling throughout show no falling off as between these three zones?"

"I do not wish," continued Mr. Denny, "to take the case of particular mines, as I have no desire to express an opinion which might be judged as prejudiced or damaging to any one part, but here there is presented a question that, from the engineering and scientific standpoint, is of great interest, and I believe, and it is my firm and unhesitating opinion, that a comparison such as that suggested by me would show that there is undoubtedly, on the average, a material falling off as between the second and first zones, and again, but in lesser degree, as between the third and second zones." Mr. Denny's opinion, like Mr. Webb's, is entitled to receive the greatest respect, but since there are no figures to show the average value over 5 ft. sections of the zones mentioned by him, one is forced to consider the aspect of the question as presented by an enquiry into the cases of particular mines. We propose to devote some space to such a consideration in our next issue.

THE PRICE OF TIN.

Some Valuable Statistics—Tables Showing Fluctuations Since 1897.

THE price of tin is an aspect of the metal market of very considerable importance to South Africa, since the Transvaal is now a tin producing country that takes rank amongst the dozen principal cassiterite producing countries of the world. Accordingly the following list of average prices, which has been compiled and forwarded us by an esteemed correspondent, should be found of much local value and interest. The figures given below state the average price of tin (in London, per ton of 2,240 lbs.) for several years past and have been compiled from authoritative reports:—

	Average for the Year.	Average per month. Lowest.	Average per month. Highest.
1897	£61 8 0	£59 18 1	£62 11 9
1898	71 4 1	63 1 7	82 10 7
1899	122 8 7	99 16 4	146 7 2
1900	133 11 6	118 9 11	142 16 10
1901	118 12 8	108 17 10	129 16 11
1902	120 14 5	105 6 5	134 13 10
1903	127 6 5	115 17 1	137 0 6
1904	126 14 8	119 11 1	133 15 6
1905	143 1 8	131 3 6	162 14 3
1906	180 12 11	164 11 10	195 19 9
1907	172 12 9	125 10 4	191 18 9
1908	133 2 6	127 12 2	143 12 10
1909	134 15 6	127 7 3	149 2 3
1910	156 9 0	147 5 0	175 0 0
1911	192 7 1	180 16 11	207 7 9
1912	209 8 10	191 14 0	228 13 8
1913 (9 months)	209 2 8	183 16 11	228 5 0

During the years 1911 and 1912 and the first nine months of 1913 the average price per ton was as follows:—

1911.

January: £187 17s. 11d.—The price during this month was pushed up to £200.
February: £189 12s. 10d.—Rise to £204 and drop to £171.
March: £182 12s. 4d.—The lowest price was £173, the highest £190.
April: £193 0s. 10d.—Prices ranged between £187 and £196 15s.
May: £197 15s. 4d.—Raised to £230. Contracts reported at £233.
June: £207 7s. 9d.—Fluctuations of no less than £13.
July: £193 2s. 0d.—Price declined to £188 10s. during month.
August: £190 9s. 7d.—Fluctuated between £187 10s. and £196.
September: £180 16s. 11d.—Extreme fluctuations of £20, lowest £171.
October: £187 2s. 9d.—Varied between £176 10s. and £191 10s
November: £194 19s. 4d.—Steady advance during month of about £15.
December: £203 7s. 2d.—Price rose to £207.

1912.

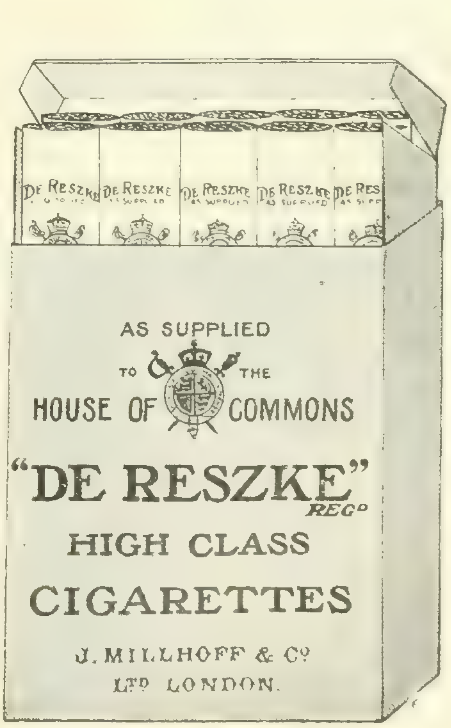
January: £191. 4s. 0d.—Prices fluctuated between £184 and £205.
February: £195 4s. 10d.—Variations from £193 to £199.
March: £192 15s. 0d.—Though the market was dull, price rose to £201 5s.
April: £200 8s. 3d.—Rise to £215.
May: £209 6s. 1d.—Prices varied from £203 to £215 10s.
June: £205 18s. 9d.—Fluctuations not of wide range.
July: £202 8s. 3d.—Market featureless and prices steady. Banka tin realised an average price of £210 7s. 6d.
August: £208 3s. 0d.—Rise during month, closing at £218 5s.
September: £223 19s. 6d.—Price carried up to £233 during month.
October: £228 13s. 8d.—Prices during month showed remarkable resistance.
November: £227 16s. 10d. Market was comparatively steady.
December: £226 17s. 8d.—Prices consistently strong throughout the month.

1913.

January: £228 5s. 0d.—Price well maintained, highest realized £232.
February: £220 6s .3d.—Reactionary tendency, price fell to £206 10s. for 3 months.
March: £213 11s. 10d.—Highest price realized, £220 10s.
April: £224 14s. 2d.—Prices on the whole well maintained.
May: £224 14s. 3d.—Fluctuations violent between £215 and £232.
June: £201 9s. 1d.- Decline started in May made steady progress. Statistical position at the end of June was quite good.
July: £183 16s. 11d.—Price touched £177. Average price at Banka auction, £185 5s.
August: £188 19s. 0d.—Prices from £177 lowest in July advanced to £197.
September: £193 7s. 7d.—Market drifted into dulness. At Banka sale average £193 10s.
October: £185 0s. 3d.—Market featureless, fluctuations limited.
November: Average during this month, according to cables, about £180.

Knight Central.

The secretary writes:—I am instructed by my board to hand the enclosed official communication to the Press: "No dividend is being declared, as it is considered inadvisable to depart from the policy of maintaining a strong financial position, in view of the fact that the development, so far accomplished, south of the dyke, has proved disappointing."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THE CROWN MINES—ROBINSON FUSION.

Material Advantages to be Derived—Largest Milling Installation on Earth—The Working of Low Grade Zones.

There has for the last year or two been a distinct lull in the work of amalgamating adjacent mining propositions on the Witwatersrand. It must be admitted that in some instances amalgamation has not resulted in the economies anticipated being realised, but for this, conditions over which the sponsors of the schemes of consolidation have had little or no control have been mainly responsible. On the other hand, some of the amalgamation projects have borne most excellent results, and on the whole it can certainly be stated that the fusion of mining properties which has been such a feature of policy on the Main Reef series during the last eight or nine years has been justified by results. The projected amalgamation of the Robinson and the Crown Mines does not come as a surprise to the public. It has, of course, been known for months past that such a scheme was being arranged, and it has only remained for the directors of the companies concerned to announce that a basis of fusion had been arrived at. With the financial details of the scheme we are not at present concerned. These details represent the views of the controlling boards after most full and deliberate consideration of the positions of the two companies, and must be regarded as representative of the most fair and equitable arrangement possible. If criticism is directed against these details it must be remembered that in matters of this kind where a host of complex contributory factors have to be taken into account a little give and take on each side in some directions must not be quibbled over.

Mr. Reyersbach's Statement.

Interviewed in London the other day, Mr. Reyersbach explained that the engineers had taken the value of the properties in both cases at considerably higher figures than the market value of the shares. It was clear that the present "discounted" value of the ore still to be mined from the Robinson Mine, plus other assets, after allowing for the deduction of the dividend just declared and the Crown Mines shares now held by the Robinson Company, represented a greater value than the present quotation of 180,000 Crown Mines shares to be given in exchange. On the other hand, the intrinsic value of the Crown Mines shares was calculated by the engineers to be quite as much in excess of the present quotation as to account for the difference. Mr. Reyersbach added: "Alone the Robinson Company would be unable to deal with the ore still in the mine in every respect as advantageously as the Crown Mines could."

"Names to Conjure With."

The fusion of these two propositions marks an event of great importance to the Central Rand. Both the Crown Mines and the Robinson are names to conjure with in the world of gold mining. The former represents the most highly organised, progressive and valuable gold mining enterprise on earth, whilst the Robinson has to its credit the record of the largest dividend aggregate distributed by any gold mine. But herein lies the difference: the Crown Mines has a long lease of productive years before it, whereas the Robinson is fast approaching the end of its tether, and unless absorbed by an adjacent company would soon be added to the list of worked out and defunct companies. The ore remaining in the mine can be worked very much more advantageously by union with the Crown Mines than if exhausted by the Robinson independently, whilst the Crown Mines will have its value materially increased by the acquisition of the ore remaining in the Robinson and by the purchase of the equipment of that company. It is clear from the report issued by the consulting engineer a few months ago that, except under very favourable labour conditions, the work of exhausting the remaining relatively poor Main Reef in the Robinson will be a matter of some difficulty and will be comparatively expensive.

The Main Reef Factor.

In regard to this Mr. Cazalet wrote:—

> The increasing importance which the payable Main Reef bears to the remaining resources on the two richer reefs is clearly indicated in last year's and this year's reports. As the coming year promises a greatly improved labour position, it should be possible to mine the tonnage required to keep the reduction works more fully supplied, by mining a proportionately larger amount of ore from the Main Reef. If this should prove to be possible, the effect will be to bring down working costs, extend the profit-earning life of the mine, but reduce the average grade of ore milled. On the other hand, should the necessary labour not be available, the effect will be to maintain high working costs owing to the reducing number of points of attack and the scattered position of many of the remaining blocks of the richer reefs.

Unfortunately, Mr. Cazalet's anticipations in regard to labour have not been realised, and it is patent that the future working of the low grade Main Reef could be much more advantageously undertaken by a company having a substantially larger crushing equipment than the comparatively small installation at present at the disposal of the Robinson management. Incidentally we might remark whilst on the subject of equipment that the Crown Mines now possesses 835 stamps and the Robinson 250, so that after consolidation the extended Crown Mines will possess the largest milling equipment of any gold mine in the world, exceeding that of the Randfontein Central Company by 85 stamps. Some of the stamps on the Crown Mines are of somewhat antiquated pattern, but there can be no doubt that in the years to come the advantages of possessing such a large milling installation as this will be abundantly manifested.

Question of "Lives."

The date when all the ore in the Crown Mines' property will be exhausted is such an affair of the nebulous future that it would be very ill-advised to attempt at this juncture any estimate of the life of this concern. As to the Robinson it may be recollected that at the last annual meeting Mr. H. C. Boyd, who presided, said:

> A number of shareholders have asked that a definite statement should be made at this meeting regarding the life of the mine. Your directors would gladly comply with this request if it were possible to do so with accuracy, but unfortunately it is not possible. The above figures reflect the position of the mine as regards known payable ore reserves as accurately as possible; as already indicated, a little development yet remains to be done on the South Reef and Leader blocks, and a fairly accurate guess could be made as to what that development will disclose, but we should still be unable to say how much will eventually be recovered from the old workings and how much Main Reef will be mined at a profit. The supply of labour available must, in the main, decide the rate at which the Main Reef can be mined, and the total tonnage that can be crushed during any given period. The scale of operations will largely decide what our working costs will be, and these again will decide how much of that reef can be treated profitably. The importance of crushing the maximum amount of Main Reef at a profit was dealt with by the Chairman last year, and is specially referred to in the consulting engineer's report now before you.

The Robinson Company has already a substantial and direct interest in the Crown Mines. Some time ago it was decided to invest some of the company's funds in the great neighbouring concern, and about six months ago the Robinson Company possessed 37,500 Crown Mines shares. The two properties are so closely affiliated that amalgamation of interests appears a perfectly natural procedure, and that benefits will accrue to each of the two concerns contributory to the fusion seems to be beyond question.

Got a Certificate?

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine-Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Pritchard Street, Box 2061.

NORTHERN TRANSVAAL ACTIVITIES.

The Old Birthday Re-opened—What the Advent of Railways Means.

Completion of the railway to the Messina Copper Mine, and extension of the Selati line into the heart of the Murchison Range, will be certain to have a very marked and favourable influence on the development of the Northern Transvaal; a portion of the Province which has always been hampered by transport difficulties and all the disadvantages attendant on inadequate railway facilities.

Railways and Health.

In a sub-tropical, low-lying region such as constitutes a large portion of the Zoutpansberg, absence of railways and of other effective means of transport means a great deal to a district. For instance, the preservation of health is not an easy matter where hospitals and doctors are only reached with difficulty and where the obtaining of medical comforts and things so essential to health as fly screens, mosquito netting, etc., is most costly. We have several instances of great improvement consequent on the advent of railways in the health of mining camps in this country to support the view that the construciton of railways into the "Low Country" means a new and more prosperous era for that part of the Transvaal, and it is generally expected that the next few years will witness very marked developments in the country extending to the north and east of Pietersburg.

Copper, Coal and Gold.

In recent issues we have shown that a highly important copper mining industry has been established close to the Limpopo River by the Messina Company. And the existing Messina Mine represents only one of many cupriferous occurrences in a zone extending along the Transvaal-Rhodesian border and into Portuguese territory. Coal beds occur in several parts of this area and gold has a very liberal distribution. It is probable that under more propitious circumstances than have hitherto prevailed some of these occurrences of gold would pay good profits.

A Land of Mistakes.

In the past many promising properties have been woefully mismanaged and have been ruined by premature crushing and a general disregard for each and every principle of mining that really counts in the management of a mineral venture. We gather that there is at present to be observed a general tendency of preparation for the advent of the railways.

Present Activities.

At least one large and important Johannesburg mining house is interested in the Low Country, and a number of mines are now either active or are preparing to undertake development, and in some instances productive operations. We hear, for instance, that there is much activity prevailing at present in the Klein Letaba district. There is some talk of resuscitating the Louis Moore in this locality, and we believe that at the old Ellerton Mine development is giving highly encouraging results. The Birthday Mine has been leased to a party of practical workers, who intend undertaking a vigorous development policy. The Birthday Syndicate is working the adjacent Letaba Mine, but as the ore there is reported to represent not more than a six months' supply for the mill the syndicate intends exploiting the Birthday. Ore from the Letaba is being taken to the old Birthday mill and there crushed. It will be recollected that the stamps in the newer battery of the Birthday were transferred to the Louis Moore G.M. Company when the Birthday Mine and plant was sold to that concern. These newer stamps were re-erected on the Louis Moore property, but the old mill remained on the Birthday and will be employed by the syndicate leasing the property.

THE NEW UNION PATENTS BILL.

Some Flaws in the Proposed Measure—Expert Criticism of Some Provisions.

As the draft of the new Patents Bill now stands (according to a paper by Messrs. L. Spoor and W. E. John, read at Saturday night's meeting of the Chemical, Metallurgical and Mining Society), a Union patent could be defeated by knowledge or use of the invention among the head-hunters of Borneo. The definition of "invention," it was pointed out, was any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement thereof, capable of being used or applied in trade or industry, and not known or used by others in the Union, or in any foreign country, and not patented or described in any printed publication in the Union or any foreign country before the application for a patent in respect of the same. The addition of the words "any foreign country," it was stated, was thought to be open to serious criticism. It involved placing Union patentees in a position of uncertainty probably unequalled in the world. Very many years ago the United States statute contained similar words, but their obvious injustice and tendency to discourage invention soon resulted in their elimination. The British law again took no account whatever of knowledge or use outside the Realm. The ultimate object of the Union Patents Law (the paper proceeded) is to increase the sum of industrial knowledge available to the people of the Union, and it is in no way concerned with the personal knowledge or practices of people in other countries. That the authors of the paper have the saving grace of humour is found in the following clauses, which, however, do not thereby lose in instructive value: "One of the peculiarities of a society like this is the unrivalled opportunity it gives speakers to inflict their pet fancies on a temporarily defenceless audience. We accordingly put forward the following definition for the criticism it no doubt deserves, with, however, the secret consolation that after all the last word will be ours. Invention means any new and useful art, machine process, manufacture or composition of matter or any new and useful improvement thereof capable of being applied in trade or industry. An invention shall not (save as provided by the necessary excepting sections) be considered as new if at the date of the application for a patent in the Union in respect thereof: (a) It is publicly used or manufactured by others in the Union; or (b) it is a matter of common knowledge in the Union or abroad; or (c) it is described in a printed publication in the Union or abroad in such a manner as to make it reasonably available to the public in the Union; or (d) it has been patented in the Union or abroad within 50 years prior to the application. Provided that use of the invention by others or its publication in print without the knowledge and consent of the inventor shall not prejudice the application for a patent or provisional protection or letters patent obtained thereon; if such use or publication was derived from the inventor, and if in the event of his learning of such use or publication he thereafter made such application with reasonable diligence." It is remarked that at the present time in the Cape and Natal an apparently valid patent may be obtained by a resident who has received knowledge of the invention from another country, whether from the actual inventor or not. "This somewhat curious practice is a relic of the period when British inventors did not exist, and all new inventions were brought into England by travellers from Flanders and other foreign countries. This was done often 'at the peril of their lives,' as the old writers put it, and accordingly merited reward; but at the present day the practice cannot logically be supported, and will not continue under the Union Act." It was also remarked that those to whom Dame Fortune has been tardy may be glad to know that in the case of a particularly important invention, for which the patentee has been inadequately remunerated, the Court may order the patent to be extended for a further period not exceeding seven, or, in exceptional cases, 14 years. A special feature of the Bill, that dealing with compulsory working, was dealt with at length. Among miscellaneous matters, the Commissioners recommended a speedy classification and indexing of all patented inventions, and the issue of a "Patents Journal," both of which will, it is thought, meet with general approval. The establishment of an adequate library is probably a no less urgent matter. Various novel provisions of the Bill and those of special interest for other reasons are dealt with, and the authors of the paper conclude: "The Bill on the whole seems to be a good one. With the object of making it as perfect as possible, it may be suggested that this Society should use its influence to eliminate or modify some of the defects which have been referred to. In our view the ideal is to ensure that as far as possible every patent which is issued shall be reasonably valid and to grant it without conditions or restrictions, except, perhaps, the payment of nominal renewal fees."

TRANSVAAL CHAMBER OF MINES' MONTHLY REPORT.

Agenda for December Meeting—Big Programme on Hand.

THE following, *inter alia*, appears in the monthly report of the Chamber of Mines: -Economic Commission: On the 11th September, 1913, the Economic Commission and its terms of reference were gazetted. The Commission was appointed to enquire and report upon wages, working hours, and cost of living on the Witwatersrand and in other industrial centres, both in South Africa and in other countries, the cost of production in the Union and in other countries, the establishment of a minimum wage in any trades and industries in the Union, and the payment for overtime and night work. The mining industry appointed a committee under the chairmanship of Mr. Samuel Evans to prepare evidence for presentation to the Commission, on behalf of the industry, and various sub-committees covering the whole of the terms of reference were also appointed. The evidence of the Chamber had not been given before the Commission at the close of the period under review.*

Mining Taxation Act, 1910: A further question has arisen under the above Act, namely, as to the correct interpretation of the provisions governing the calculation of the amount of the allowance for amortisation of capital expenditure, and your Executive Committee is arranging for this matter, in addition to one referred to in the last Executive report, to be decided in the Courts on behalf of gold mining companies.

Water Supply: The Chamber, as a constituent body of the Rand Water Board, has received a copy of Private Bill for the supply of water from the Vaal River to the Witwatersrand, which will be presented to Parliament during the coming session. It is expected that if this Bill is passed the necessary work will be started during the winter of next year, to be completed in approximately four years from the date of commencement.

Administration of Estates Act, 1913: A form of affidavit, affording evidence sufficient to enable the Master of the Supreme Court (in terms of paragraph (a) of Section 67 of the above Act) to dispense with the ordinary procedure for the Administration of Estates within the Union, namely, in those cases where the deceased was not ordinarily resident within the Union, has been agreed upon by the Master and adopted by your Executive Committee on behalf of the Chamber.

Mines and Works Act (new and amended regulations): The Chamber has been furnished with copies of various new and amended Regulations, embodying amendments notified in the report of the Executive Committee for April last, and numerous additions thereto. Representations have been made to the Government on the subject, and a deputation of the Chamber had an interview with the Minister of Mines and Industries on October 16th, at which certain of the recommendations put forward on behalf of the Chamber were accepted. The Regulations were promulgated in the *Government Gazette* of October 31st.

Grading of Mealies: Your Executive Committee was informed recently that owing to the inferiority of the season's crop of maize representations were being made to the Government with a view to the lowering of the Government standard of maize grades. In consequence, a deputation of the Chamber interviewed the Director and Under-Secretary of Agriculture on the subject. The definitions of the various grades, which were established in June, 1911, and amplified in February, 1912, have not been amended.

Health Conditions on the Mines: Colonel W. C. Gorgas, Dr. S. T. Darling, and Major R. E. Noble have arrived on the Witwatersrand, and have commenced their investigations on the subject of sanitation and the betterment of the health conditions generally on these fields.

Membership: The following withdrawals from membership as from December 31st, 1913, have been notified:—Cinderella Consolidated Gold Mines, Ltd.; representative, Mr. W. H. Dalton. Grootvlei Proprietary Mines, Ltd.; representative, Mr. S. Marks. Jupiter G.M. Co., Ltd.; representative, F. D. P. Chaplin, Esq., M.L.A. Lancaster West G.M. Co., Ltd.; representative, Mr. C. L. Chalmers. Rand Collieries, Ltd.; representative, Mr. A. French. Randfontein Deep, Ltd.; representative, Mr. Frank Hall. Rand Klip, Ltd.; representative, Mr. E. H. Read. The South African and General Investment and Trust Co., Ltd.; representative, Mr. C. Davies. Treasury Gold Mines, Ltd.; representative, Mr. W. H. B. Frank.

Representation: The following changes in representation have taken place:—Geduld Proprietary Mines, Ltd.: Mr. R. Heymann *vice* Mr. O. Heymann. Glynn's Lydenburg, Ltd.: Mr. Ralph Martin *vice* the late Mr. W. R. Slack. Knights Deep, Ltd.: Mr. F. D. P. Chaplin *vice* Mr. J. E. Kent.

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*This was handed to the Commission on Wednesday. ED.

Carolina Asbestos Co.

The seventh annual meeting of the Carolina Asbestos Company, Ltd., was held in the board room, Consolidated Gold Fields Buildings, last week. Mr. F. D. P. Chaplin, M.L.A., presided. Others present were Messrs. J. H. Ryan, D. W. Rossiter, W. S. Smits, A. S. Ball, A. Barker, F. L. Brown, F. M. Cowan, and C. Hely Hutchinson, secretary. The share representation among those present was 24,009, out of issued shares amounting to 40,000. The report of the directors for the year ended September 30, 1913, stated: Your directors beg to submit their report, together with the accounts, for the year ended September 30, 1913. The capital of your company remains unaltered, and consists of £52,000 in 52,000 shares of £1 each, of which 40,000 shares are issued fully paid up, and 12,000 shares are held in reserve. Your property comprises all the rights to asbestos on the farm Diepgezet No. 33, district Carolina, together with facilities for working same. No work has been carried out at the property during the year. An option to acquire your property, on account of which negotiations were instituted at the time of the last ordinary general meeting, and which resulted in an agreement being entered into, lapsed owing to the non-fulfilment of the terms of that agreement. It will be observed from the income and expenditure account that the expenses during the year exceeded the income by £141 3s. 2d., and this amount has been added to the debit balance shown in the income and expenditure account as 30th of September, 1912, making a total debit balance on that account at 30th September, 1913, of £3,967 14s. 7d. The Chairman, in moving the adoption of the report and accounts, said he had little to add to the information they contained. It would be remembered that in March last an extraordinary general meeting of shareholders was held, when resolutions were passed and subsequently confirmed at the further meeting of shareholders held in April last. These resolutions amended the articles of association and empowered the directors to lease the asbestos rights with an option of purchase. The original negotiations for the lease of these rights came to nothing owing to the non-fulfilment of the terms of the option agreement. Since the close of the financial year, however, the directors accepted an offer for the lease of the asbestos rights for a period of one year from the 1st of January, 1914. The lessees had been granted the option to purchase the right for £4,000. The reports were adopted without discussion, and Messrs. I. Rapaport and D. Christopherson were re-elected as directors.

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The "Safety First" Campaign.

NEED FOR IMPROVED DISCIPLINE.

To the Editor, *South African Mining Journal.*

Sir,—With your kind permission I would like to make a few observations on the subject of "Safety First." The protagonists of "Safety First" have the object in view of reducing the number of accidents on the mines of the Witwatersrand, an object which I think every mine official should keep foremost in his mind. Now, Sir, a great number of the accidents at the present time are, without doubt, due to carelessness on the part of the miner himself, and to slackness on the part of the official who comes into direct contact with him daily at the working face; this official is, of course, the shift boss. We all know that it is impossible for the manager or mine captain to visit and inspect all the working places daily, but it should not be impossible for the shift boss, consequently he is the official whom we must look to for the carrying out of the principle of "Safety First." And this can only be done by his exercising discipline consistent with his position. At the present time there are too many men holding the post of shift boss who are of a totally irresponsible character, who have unfortunately no enthusiasm in their work; they are more interested in "Tango" teas and dances in the fashionable hotels and cafes in town than in the conditions of the working places in the section under their charge. They pass through many of the working places without making the close inspection which the mining regulations call upon them to do, but merely ask the miner if everything is all right, and pass on. Other shift bosses play for popularity with the men working under them, a policy which usually results in the miner becoming careless. Furthermore, these methods of shift bossing make things difficult and uncomfortable for the shift boss who is particular and insists on having the mining regulations carried out and the work done in a systematic and safe manner. The particular and straight man is very often put down as a tyrant and is rebuked by his superiors for being too harsh with his men. In my opinion it is the duty of a shift boss to point out in detail to his men what has to be done and the reason why, and to be firm with his men and see that they get the necessary material to do the work with, because if he is careless in this respect the men will in turn be careless in the performing of the work; he should also see that proper use is made of such material and none wasted, as is the case on many mines on the Rand. This class of shift boss will in the long run be appreciated by the experienced and inexperienced miner alike and also by the mine management. The only one who won't like this kind of man is the loafer, by whom I personally should prefer to be disliked. I maintain, Sir, that the shift boss required on the reef at the present time is the energetic and practical man, because theory won't do when it comes to dealing with a treacherous hanging, and "Safety First" is desired. I may also mention that a great deal depends on the mine overseer, the more discipline he has in his methods the sooner the work becomes organised; there ought to be a complete and thorough understanding between the mine captain and shift boss as regards the methods and system of working. Then, Sir, we would see the working costs reduced, general efficiency greater, the health conditions underground better, many less accidents would occur and more ground would be tipped. And there is absolutely no reason why all this cannot be achieved if you improve the shift boss.—I am, etc.

"DISCIPLINE."

December 16th, 1913.

Another "Safety First" Suggestion.

To the Editor, *South African Mining Journal.*

Sir,—As a practical miner I have been much interested in the articles appearing in your journal in connection with the "Safety First" campaign. There is undoubtedly a great deal of useful work to be done in this direction, for the numbers of lives that have been lost through accidents in the mines of the Witwatersrand, if totalled up, would represent a very terrible death-roll indeed. Then there are hundreds of men who have received injuries, in many instances permanent injuries, which have incapacitated them for the rest of their lives. In a large number of cases these accidents have been of an avoidable nature, and it cannot be urged too strongly that no stone should be left unturned to educate the men up to realising what dangers continually confront them in the mine, and how these dangers can best be avoided. The "Safety First" campaign could, I believe, be greatly furthered if there were some additional incentive to minimise accident rates. One would think that the safeguarding of life and limb would be sufficient incentive in itself, but it seems to me that with a large number of men it is not enough. This may sound an extraordinary statement, but I make it after eight years' work in our gold mines. A big proportion of our miners seem to value their own lives and those of their fellow-workers at less than a shift's pay, and I therefore make the suggestion that the mining houses should combine and offer a prize for the mine that decreases its accident rate to the greatest extent during, say, the next six months. Let the prize be an extra day's pay for every man on the property. After all it would not represent such a very large sum to the rich mining corporations of Johannesburg, and I am sure that the competition it would induce would be most beneficial in reducing accidents. I hope, Sir, you will give this suggestion some prominence in your journal.—I am, etc.,

"A MINER."

Brakpan, Dec. 17th.

Mine Underground Workers' Shield Competition.

To the Editor, *South African Mining Journal.*

Sir,—The competition for the Underground Workers' Shield, presented by the Chemical, Metallurgical and Mining Society of South Africa, will be held on Sunday next, the 21st inst., under actual practical conditions underground at the Meyer & Charlton G.M. Company, Ltd. The Wolhuter tram, leaving Market Square (Central), Johannesburg, at 7, 22, 37, and 52 minutes past the hour (fare 3d.) passes near to the mine, which will be marked by a Red Cross flag flying from the top of the headgear. Teams have been entered by the following mines:—(1) Crown Mines, Ltd., (2) De Beers Consolidated Mines, Ltd., (3) Ferreira Deep, Ltd. (A), (4), Ferreira Deep, Ltd. (B), (5) Knight Central, Ltd., (6) Luipaardsvlei Estate and G.M. Company, Ltd., (7) West Rand Consolidated Mines, Ltd. The competition will commence at 10 a.m. sharp, and the members of the competing teams are requested to meet at the Mines offices at 9.30 a.m. (when a ballot will take place for order of competition), in order to be in readiness. Underground clothes must be brought and worn by all competitors. If preferred, teams may bring the stretchers generally used by them underground, but splints will be provided. Plain triangular bandages must be provided by all teams. It will be necessary for every person (other than those mentioned in the next paragraph) proceeding underground, to sign the usual indemnity form provided by the company. Members of teams representing mines connected with the Rand

Mutual Assurance Company are covered by their ordinary insurance policy. The attention of all competitors is drawn to the rules and conditions, particularly to No. 15, which provides that competitors shall not be allowed to communicate with those who have already competed or with persons who may have seen the competition; to do so will disqualify the team.—Yours, etc.

FRED. ROWLAND,
Hon. Secretary.

"When the Mines Close Down."

To the Editor, *South African Mining Journal.*

Sir,—"When the mines close down." My word, we are looking ahead. Closing down for very obvious reasons, and being worked out, are quite different, and on a base with other suggestions in your current issue, supposed to have been made at a Southern Suburban ratepayers' meeting. Let us compare Chicago and Johannesburg. Amongst the sights of Chicago are the depôts—terminals of the 17 competing railways. Here we have "Park Station"—that's a sight. Chicago has, with its suburbs, over 30 miles of water front. Here we have our dumps. Both by rail and water Chicago taps Pacific, Atlantic, Canada and Mexico direct. Here we have one line of railway, politically run. The stock yards of Chicago would hold all the slaughter oxen in the Transvaal, at one time. Don't think I am disparaging Johannesburg. On the contrary, I think the coupling of the two cities absurd. You might just as well compare Pekin and Paris. Johannesburg is the greatest mining centre in the world, and only in its infancy. No man alive to-day will see the Rand worked out. The present management won't last for ever. We make no effort to produce other than gold. The condition and depression of things in general is the fault of the Government. The country is closed to other than a thriftless, unprogressive and unsatisfactory farmer—so-called. With emigration and broad and liberal Imperial views, we might liken Johannesburg to Sheffield or Birmingham. I have much to say and your space is limited. I can't get on without a smile. If you were ever in India you would know that the country is full of universities. Your "high caste" native is a man of degrees. His English is melodious and pleasing, but it's not yours. He learned from the top. You from the nursery, he knows nothing of the many infantile phrases we cannot forget and still use. He, the "high cast," is like the average mining man one meets here—they learn from the top. The other end is the pick and pan experience in the field. Just over forty years ago I was junior in a wild and wicked camp—where crime meant death. There were no police to protect you. The dirt was very rich, coarse in places and fine in others; in fact so fine as to be called dust, and this dust floated just like paper. It was necessary to use silver, about a thimbleful to a pan. Results were pooled; we worked in gangs. It was my lot to do the minting. The amalgam was handled in such a simple way that any child with savy enough to boil an egg could do the trick—with less equipment and at less expense than it costs to boil the egg. Have you any idea of the amount of gold to-day in some of the supposed worked-out claims round Barberton and De Kaap Valley? You see the things one learns at the bottom as a boy. You cannot be expected to pick up and know in a line you have drifted into with a "sore head" at middle age. Now for the Birmingham and Sheffield side of the question. The biggest and highest grade deposit of iron in the world—millions of tons in sight, mountains of it, lies a bit to the west. What will be one of the greatest tinfields ever discovered is only a few hours to the north (I have no claims for sale—I was spoofed out of them), and wants developing. If the coal resources were opened up we could supply the world (the coal belt is right into the Kalahari). And the richest deposit of diamonds ever discovered is guarded. Why? And with these resources we are invited to ask Government for money to convert Johannesburg into a shambles. Johannesburg may manufacture all the tinware required in the country some day. But it will never tin dog. I could fill your journal full of the possibilities waiting between the Indian Ocean and the German border. And no one knows better than yourself why they wait. But not one of them will ever produce a canning proposition. By the way, Chicago has over 2,500,000 of a population—white.—Yours, etc.,

PAT BOYLE.

P.O. Box 2452.

RAND ROCK TEMPERATURES.*

[By E. J. MOYNIHAN.]

In the solution of all problems the first necessity is to state the facts correctly. The author's main object is to lower the temperature in the working places of the mines of the Rand. In order to achieve this object, it is first of all necessary to know the rate at which the rock temperature increases with depth. It is generally assumed here that this is known, and that the rate of temperature increase is an exceptionally low one. It is an easy matter to prove that it is neither known nor exceptionally low, in spite of the general assumption to the contrary, which has even found its way into the "Encyclopædia Britannica Year Book." The rate of increase is generally taken to be approximately 1 degree for every 254 feet, on the basis of a paper read before this Society by Messrs. Whitehouse and Wotherspoon in May, 1911. The Government Mining Engineer's report for the current year contains a large number of records of actual mine temperatures, which prove that the accepted figure is very far from the truth. The temperature of the undisturbed rock within a very few feet of the surface at any particular place is necessarily and actually, within a degree or so, the mean temperature of that place. The mean temperature of Johannesburg is, closely, 60 deg. F. For purposes of calculation, that may therefore be taken as the temperature of the rock at the surface. The temperature of the mine air of the Rand at any great depth is in every case less than the actual original temperature of the rock at that depth. If that were not so, air entering the mine at a normal temperature of 60 degrees would come out of the mine colder than it went in—which is not the case. The temperature gradient, calculated on the basis of the mine air temperature, is therefore always less than the true original temperature gradient of the rock. How much less depends on the conditions of the mines. The records published by the Mines Department show that the rate of increase of temperature of mine workings is greater than 1 degree for every 100 feet in about a dozen of the mines of the Rand. In two cases the rate is greater than 1 in 70 feet, and on the New Modderfontein the rate is 1 in 61 feet. It is therefore clear that the original rate of increase of rock temperature in many of the mines of the Rand must have been very much more than 1 degree in 100 feet, and it is probable that in some of them it was nearly 1 degree for every 50 feet. The following are some of the details referred to:—

Mine.	Depth for observation.	Temperature at that depth.	Rate of increase.
Consolidated Langlaagte	1,960 ft.	80 deg.	1 deg. for 98 ft
Glencairn Main Reef	996 ft.	70 deg.	1 deg. for 99 ft.
Langlaagte Block B.	1,750 ft.	80 deg.	1 deg. for 88 ft
Luipaardsvlei Estate	1,675 ft.	80 deg.	1 deg. for 84 ft.
New Kleinfontein	1,800 ft.	80 deg.	1 deg. for 90 ft.
New Modderfontein	1,820 ft.	90 deg.	1 deg. for 61 ft.
New Primrose	980 ft.	71 deg.	1 deg. for 90 ft.
New Rietfontein	1,160 ft.	73 deg.	1 deg. for 89 ft.
New Unified	1,260 ft.	75 deg.	1 deg. for 84 ft.
Robinson	1,545 ft.	76 deg.	1 deg. for 97 ft.
Rose Deep	1,540 ft.	83 deg.	1 deg. for 68 ft.
Village Main Reef	100 ft.	71 deg.	
Village Main Reef	2,000 ft.	75 deg.	1 deg. for 134 ft.
Village Deep	1,924 ft.	60 deg.	
Village Deep	4,245 ft.	70 deg.	1 deg. for 424 ft.

In only one case, apparently, is the rate as low as that given in Messrs. Whitehouse and Wotherspoon's paper, and that is in Mr. Whitehouse's own mine—the Village Deep. The rate there is phenomenally low, according to the figures furnished in the Mines Department report. It is 1 degree for 424 feet. There must be something wrong with the figures. They give the temperature of the highest and lowest workings as from 60 deg. to 70 deg. respectively. In the first place the lowest temperature in the Village Main Reef—the upcast for the Village Deep—is given as 1 degree higher than the highest temperature in the deeper mine below it. In the second place, Messrs. Whitehouse and Wotherspoon, in their original paper, give plenty of working temperatrues much higher than 70 deg. In the third place the air temperature at 1,924 feet in depth is given as equal to the mean temperature at the surface. In the fourth place, if Messrs. Whitehouse and Wotherspoon's temperature gradient, and the Mines Department figures are both correct, then the rock in that mine has the somewhat remarkable and exceptional power of withdrawing heat from air that is colder than the rock itself. The whole question of the determination of the temperature gradient in rock—and especially in mines—is in a very unsatisfactory state. I wish to say distinctly that I do not question the good faith of any of the observations, but I think that certain most important considerations have been overlooked. I hope to deal with them in a short paper for this Society at an early date. The fact that experiments have shown the uselessness of the suggested means of ventilation and cooling by Roots' blowers with high pressure air has already been pointed out. The large consumption of power necessary has been also shown by former speakers. But one of the reasons for the failure has yet to be made clear. In compressing air in a Roots blower or any other similar machine, you virtually have adiabatic compression. That raises the temperature of the air several degrees before it starts going down the mine. Once in the air pipe it can never become absolutely as cool as the mine air by radiation or conduction. Also, and especially as it is not free to take up moisture in the pipe, it tends to become still hotter as it goes down the mine, and its absolute pressure due to depth increases. Since it only does frictional work in the pipe, its temperature is not sensibly lowered by expansion or "wire-drawing" in overcoming the friction of the pipe, nor on escaping at the end of its journey. There is nothing like the refrigerating effect of the rock drill, which as it does an appreciable amount of work, releases its air at a temperature much lower than that at which it receives it. A few such machines will reduce temperature several degrees over a fairly large area in an hour or so, as every miner knows. The author is aiming at the right target, but he cannot hit the mark with this particular gun. The gun shoots backwards.

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*Contribution to the discussion on Mr. Blenkinsop's paper on "Ventilation of the Mines of the Rand," read before the Chemical, Metallurgical and Mining Society of South Africa on December 13, 1913.

Rhodesian Section.

LATEST MINING NEWS.

The Cam and Motor—Mayo Company's Report—United Rhodesia Gold Fields—Rezende Mines—Gaika Mine.

Mr. Julius Weil, Chairman of the Cam and Motor Company, has been visiting Gatooma in connection with the starting up of the equipment of that company's mine. The annual report of the company, which has just been issued, states, inter alia:—Development work during the period from 30th June to 31st December last, when all development work ceased, was concentrated on extending No. 5 level in the Motor Mine in a southerly direction and in partially opening up No. 6 level, with the result that 111,832 tons were added to the ore reserves, which now stand at 1,016,240 tons of a value of 44s. 6.2d. per ton. Since development work was stopped the Motor Mine has been resampled and assayed by Mr. J. McDermott, the new manager, and he confirms the estimate of ore reserves and values shown on the various assay plans. He states that development work so far carried out at No. 6 level (the present lowest point of the mine) south of the main shaft is very encouraging, and that the ore exposed to date shows good values, and that the further opening up of this level by the extension of the main south drive should show large additions to the ore reserves. Cam, Good Shepherd and Petrol Properties.—No work has been done on these properties during the year, but the Directors were able to report to the Shareholders in terms of a circular sent to them dated September 25th, that an arrangement had been entered into with the Giant Mines of Rhodesia, Limited. The energies of the management have been almost entirely directed, during the period under review, to the erection of the plant. A cable has recently been received stating that the whole of the construction work will be finished by the end of November. The native compound has been further enlarged to accommodate the labour that will be required. From reports received your Directors have no fear that all the labour necessary for the mine will be available.

* * * *

In the report of the Mayo (Rhodesia) Development Company for the year ended July 31st, it is stated that the interim dividend of 10 per cent. for the year 1913, recommended in the last annual report, was duly paid on November 8, 1912, and the shareholders will be asked to confirm this. The profit and loss account shows that £11,827 has been written off the cost of Commonwealth Gold Mining shares, and that a debit balance of £8,484 is carried to the balance sheet, reducing the credit balance to £8,652. The report states that the Company own 503 claims, 70 claims having been acquired during the year, and 204 abandoned. In addition to the claims, building, plant, etc., at the close of the financial year, the company held £17,544 investments at cost, £5,600 at bankers, and £16,168 on loan at short call against securities. The loans from bankers and others owing by the Company amounted to £16,000.

* * * *

The report of the United Rhodesia Gold Fields for the year ended July 31st last states that 70 claims have been sold to the Just-in-Time Gold Mining Company, for which this company received 4,000 fully-paid shares. Crushing on the King's Daughter and Violet recommenced in October, 1912, and was proceeded almost continuously up to the end of the financial year. A large amount of development has been done by the tributors with very little result. On the Day Dawn 150 feet of work was done by the optionholders, and the results justify further prospecting. The Company have been successful in leasing the Inez Mine, and the prospects are more encouraging. Crushing was restarted in June. The report states that at July 31st the total amount of development work standing to the credit of the company was 52,366 feet, to which must be added development work done on the properties during the past year amounting to 6,211 feet, making a total of 58,577 feet. The land sales of the Rhodesia Lands (Limited) during the year 1912 were satisfactory, 8,904 acres having been sold for £8,394, being an average of 18s. 10d. per acre, making the total sales to that date of 67,766 acres for £52,593, averaging 15s. 6d. per acre. The profit and loss account shows a credit balance of £10,310, making with the sum brought in £18,700.

* * * *

The report of the Rezende Mines for the September quarter shows that the total estimated profit for the period was £7,853. Full advantage has been taken of the favourable power and labour conditions prevailing to push on with development work, and the footage accomplished during the quarter totalled 4,153 feet. Central Section: The 650 ft. level shaft has been connected up with the 900 ft. level, and the total footage accomplished, including sinking, station cutting, and water lodgment area, amounted to 128. Sinking has been resumed for the next level. On the 900 ft. level a footage of 135 was accomplished in the footwall country of the ore body. The work of stripping the ore body is now being undertaken with encouraging results; no widths are yet determined, as the hanging wall of the reef has not yet been exposed. A winze sunk on the reef from this level averaged 7.0 dwts. for 57 ins. exposed over a depth of 25 feet. Old West Workings: 1,615 ft. of development has been accomplished in this section; of this total 901 ft. was accomplished in the tribute section. A three-compartment main shaft has been started on the tribute section; this had reached a depth of 100 ft. at the end of the quarter. In the old west section the ore body is being opened out by drives on the 3rd level. These drives are being cross-cutted at 60 ft. intervals with a view to determining the full width and value of the ore body. The 2nd level west drive has been extended 150 ft., and the portion of ore body exposed averaged 5·1 dwts. for a width of 62 ins. Imbeza Section: The tributors' plant recently acquired has been at work continuously, resulting in the treatment of 9,852 tons, from which an estimated profit of £2,052 has been made. An additional 10 stamps, bringing the stamping capacity up to 20 stamps, are now in course of erection at this section.

* * * *

In his annual report, Mr. A. J. Fraser, Assistant Consulting Engineer of the Gaika Mine, writes of the operations of that company:—

> The grade of ore milled, 10·3 dwts., has been considerably below the average of the reserves. This is partly owing to the fact that nearly a third of the total milled was from development rock. The chief reason, however, was that it was found that the richer ore from the north reef and also from the Robin Hood was proving refractory, and with the present plant only a poor extraction was being obtained. It has therefore been our policy for the time being to mill as much as possible from the south reef and magazine reef, on which a fair extraction can be obtained. At the beginning of the period only a small tonnage was estimated as remaining in the south reef. However, although no further development has been done, a considerably greater tonnage has been stoped than was expected, and at date of writing it appears as though this and the magazine reef would produce 1,000 tons per month of payable reef for some months to come. Most of this ore is being won from odd corners and stringers which could not be estimated in ore reserves. As regards improving the extraction a pan recently put in has more than paid for itself in two months' run. Experiments will be made with a "Record" vanner to see whether by extracting the bulk of the mineral in the form of concentrates a better extraction can be obtained in the sands and slimes plants. Arrangements can probably be made to sell the concentrates to a neighbouring mine, where they could be treated in a roasting furnace. At present the future of the mine does not appear to justify the erection of a roasting furnace to treat either a portion or the whole of the ore. Should, however, the Robin Hood continue to improve, and the position at depth on the north reef change for the better, this would be considered. In

the meantime it is intended to slightly raise the mill grade, which should result in better monthly profits. Capital expenditure, while not as heavy as last year, has still been considerable, amounting to £8,933. When milling was first started on this mine—in August, 1905—the cost of the equipment, mill, shafts, buildings, etc., was cut down to a minimum, and during the last two years much has had to be done, both in replacing and increasing the surface equipment in nearly every direction. Nothing has been done that has not been absolutely necessary. As already mentioned, the Robin Hood developments may be considered extremely satisfactory, and prospects here of continuity in depth have greatly improved. The north reef has been disappointing, but the appearance of the reef and its walls, together with the high amount of mineralisation, gives great hopes that at the 9th and 10th levels a local impoverishment only has occurred. The fact that the ore reserves have materially increased is most satisfactory. The working profit for the year is small, but this should be greatly improved upon during the ensuing twelve months.

Rezende Mines.

The results for the month of November, 1913, were as follows:—Estimated profit: Central section, £2,016; Old West workings, £404; Penhalonga section, £143; total estimated profit, £2,563.

Pickstone Gold Mines.

Extract from manager's report for month of October is as follows:—Ten gravity stamps and one Chilian mill crushed 3,133 tons, returning 775 ozs.; 1,020 tons treated by cyanide returned 249 ozs.; estimated working profit for the month, £1,960.

QUARTERLY REPORTS.

Witwatersrand Deep.

During the quarter ended September 30 the Witwatersrand Deep made a profit of £84,008 7s. 5d., equal to 12s. 9·30d. per ton milled. On capital account an amount of £10,478 14s. was expended. The south incline shaft has been sunk 67·5 feet to a total depth of 76·5 feet. The west incline shaft has been sunk 90 feet to a total depth of 1,858 feet, and timbered 60 feet to a total depth of 1,765 feet. The No. 3 north incline shaft has been sunk 11·5 feet to a total depth of 245·5 feet, and timbered 45 feet to a total depth of 230 feet. No. 3 north incline shaft has been widened 36 feet to a total depth of 234 feet On development there was accomplished a total of 3,756 feet. Of the total development 2,443 feet or 65·04 per cent. has been on reef. Altogether 2,276 feet have been sampled. This total comprises 1,750 feet or 76·89 per cent. averaging 10·86 dwts. over 45·87 inches and 526 feet or 23·11 per cent. averaging 4·14 dwts. over 30·08 inches. The ore reserves at September 30 amounted to 1,599,888 tons. The amount of water pumped for the quarter was 118,585,400 gallons and cost £3,494 5s. nett to pump, equal to 6·38d. per ton milled.

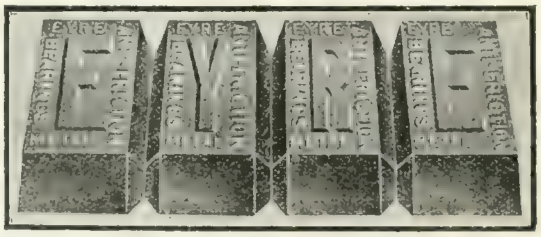
Elandsfontein Estate.

The twentieth ordinary general meeting of the Elandsfontein Estate Company, Ltd., was held last week in the board room, Consolidated Gold Fields Buildings. Mr. F. D. P. Chaplin presided. There were also present Messrs. F. Leslie Brown, A. S. Pearse, W. S. Smits, F. R. Lynch, H. Neuhaus, F. M. Cowan and C. Hely-Hutchinson, secretary. The representation of shares in the attendance was 23,354, the total issue being 30,000. The report of the directors on affairs and accounts for the year ended on the 31st of October last showed that the capital of the company was unchanged, consisting of thirty thousand £1 sterling shares, all of which had been issued fully paid. The freehold area of the property, which comprised the whole of the freehold farm Elandsfontein No. 6, consisted of 2,329 morgen 9 square roods. The company also held 33·120 claims under mynpacht title and claim licences on the farm Elandsfontein No. 26. The profit and loss account showed that the net profit for the year amounted to £3,423 7s. 8d., with the balance at credit of the appropriation account at 31st October, 1912, £1,036 2s. 4d., making a total of £4,459 10s. This, less dividends of 5 per cent each declared during the year of £3,000, left a balance at credit of appropriation account at the 31st of October, 1913, of £1,459 10s The Chairman, in moving the adoption of the report and accounts, said that the property remained unaltered, and the excess of revenue over expenses for the year was £3,423, which was slightly more than last year's figure. This sum and the amount brought forward, viz., £1,036, made a total of £4,459, out of which two dividends, Nos. 49 and 50, of 5 per cent. each had been paid in February and September respectively, absorbing £3,000, and leaving a balance at the 31st October of £1,459. The reports were adopted. Messrs. F. D. P. Chaplin and C. Davies were duly re-elected as directors, while Mr. Douglas was re-appointed auditor.

Wolhuter Gold Mines.

Revenue, £124,615 15s. 1d., or £1 7s. 9·23d. per ton from 89,750 tons milled; cost, £81,597 4s. 8d., or 18s. 2·199d. per ton; profit, £43,018 10s. 5d., or 9s. 7·035d. per ton; capital expenditure, £5,759 18s. 3d.; development, 3,170 feet; yield, mill, 21·666 ozs.; cyanide and slimes, 8,113 ozs., or 6·614 dwts. per ton milled. Tons developed or exposed during the quarter (includes ore mined from development).—Assumed payable tonnage: Deep level, 52,688 tons; assay value, 6·40 dwts. over 54·8 inches; east incline, 39,288 tons; assay value, 6·02 dwts. over 66·4 inches; mynpacht, 4,002 tons; assay value, 5·70 dwts. over 47·0 inches; totals, 96,978 tons, assay value 6·21 dwts. over 58·6 inches. The ore reserves are being re-calculated, and will be shown in the annual report. The machinery and plant continue in good working order. The electric hoist, auxiliary shaft, has been erected, and is now running. A new white change house (M.V.S.) and new slimes tanks are in course of erection.

The following additional Regulation to the Regulations framed under the Explosives Act, 1911 (Act No. 8 of 1911), has been promulgated: A.—Unlawful possession of explosives: (1) Any person who is found to have in his possession or under his control any explosive under such circumstances as to give rise to a reasonable suspicion that he had such explosive in his possession or under his control for an unlawful object shall be guilty of an offence and liable upon conviction to a fine not exceeding £150 or in default of payment to imprisonment with or without hard labour for a period not exceeding twelve months, and the explosives so found may be confiscated.



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THE WEEK IN THE SHAREMARKET.

Dividends Produce Good Effect—Little Business Doing—Improved Undertone.

THE dividend declarations are generally regarded as most satisfactory, and appear to have created an excellent impression in London. They can, however, do little in face of the prevailing apathy in all markets there. The labour supply is expected to improve after the New Year, and a revival of interest in the Rand may then be looked for. Diamond shares have been quieter on the inactivity in the market for the stones, but, here again an improvment is promised when the American dealers re-start buying in the New Year. Local diamond syndicates are keeping fairly active, with Pilandsbergs still in the van. At a meeting held during the week the chairman gave a most glowing account of the prospects of the mine. Other diamond syndicates are still bidding for favour, and washing results are now eagerly awaited by holders. Certainly, if the expected revival in the market for the stones takes place in January, more activity will, doubtless, be seen in this direction. Sakalava Oils have had numerous fluctuations on favourable reports from the property, and the stock has possibilities. Tins have been quieter on the lower price of the metal, and the Rooiberg dividend came as a surprise to many, who had not taken that factor into consideration. Progress is rumoured to have been made with the New Kleinfontein—Apex—Benoni absorption, and some rich patches are said to have been struck in the first-named.

* * * *

	Fri., 12th.	Sat., 13th.	Mon., 15th.	Wed., 17th.	Thurs., 18th.
Adair-Ushers	0 3*	—			—
African Farms	15 3*	15 6	15 3	15 0*	15 6
Apex Mines	20 3	20 6†	19 0*	20 0†	19 0†
Bantjes Consolidated	—	14 0	14 0*	14 6	14 0
Benoni Consolidated	2 0*	2 4			
Brakpan Mines		46 0*	46 0*	46 0*	47 6*
Breyten Collieries	29 0*	29 6	29 0*	29 0*	28 6*
British South Africa	—		—	18 0*	
Bushveld Tins		0 6*	0 6*	0 6*	0 6
Cinderella Consolidated	3 3	—	—	—	
City and Suburbans	48 0	48 0	47 9*	48 0†	48 0†
City Deeps	54 0*		53 0*	53 6*	53 6*
Cloverfield Mines	4 3*	4 3*	4 3	4 3*	4 3*
Clydesdale Collieries	—		8 0*	—	
Cons. Investments	16 9*	—	17 0*	—	16 3*
Cons. Langlaagtes	28 0*	27 3*	27 0*	28 3*	28 6*
Cons. Main Reefs	17 0*	17 0*	17 0*	17 0*	17 0*
Cons. Mines Selection	7 0*	7 6†	8 0†	6 0*	
Coronation Collieries	12 6*				12 6*
Coronation Freeholds	0 5	0 5*	0 5	0 5	0 5*
Crown Diamonds	8 0†	7 6*	7 6	7 6*	7 9*
Crown Mines	122 6*	122 6*			122 6*
Crown Mines Debentures	£97½†				
Doornhoek Tins	6 0†		6 0†	—	
East Rand Centrals	8 0	8 0*	8 0	8 0*	8 0
East Rand Coals	1 11*	1 11*	1 10*	1 10*	1 10*
East Rand Deeps	1 4*	1 3*	1 3*	1 3	1 6†
East Rand Props.	40 0	40 0*	40 0*	40 0*	40 0
East Rand Debentures	—	£87½†	£87½†	£87½†	—
Eastern Gold Mines	1 0*	1 0*	1 0*	1 0*	1 0*
Frank Smith Diamonds	6 3	6 0*	6 0*	6 0*	6 0
Geduld Props	21 3*	—	21 0*	—	—
Geldenhuis Deeps	20 0*				
Glencairn Main Reefs	2 6*	2 6*	3 0		3 0
Glencoe (Natal) Collieries	7 3*	7 3*	7 3*		7 0*
Glynn's Lydenburgs		13 0†		—	
Government Areas	18 0*	18 3*	18 0	18 0	[illegible]
Jupiters	4 0*	4 0*	4 0*	4 0*	4 0*
Kaalfontein Diamonds	0 4*	0 4*	0 6	0 5*	0 5
Klerksdorp Props.	2 0†	1 11*	1 11*	2 0	2 0*
Knight Centrals	7 4*	7 4*	7 3	7 3	7 1*
Lace Props.	2 6*	2 6*	2 6*	2 6*	2 6
Luipaardsvlei Estates	8 6	8 6*	8 6		8 6*
Lydenburg Farms	2 9*	2 9*	2 9*	2 9*	2 9
Main Reef Wests	6 6†	6 0*	6 0	6 3†	6 6†
Main Reef West Debentures	—			£64	£60*
Meyer and Charltons	106 3*				
Middlevlei Estates	0 9*	0 9*		0 9*	0 9*
Modderfontein B.	81 0*			78 6*	79 0
Modderfontein Deeps	36 6	37 0	36 3*	36 6	[illegible]
Natal Navigation Collieries	15 0*				
New Boksburgs	0 9*	0 9*	0 9	0 9*	0 9*

*Buyers. †Sellers

	Fri., 12th.	Sat., 13th.	Mon., 15th.	Wed., 17th.	Thurs., 18th.
New Eland Diamonds	25 0*	25 0*	25 0*	25 6*	26 0*
New Era Cons.	5 0*	5 3*	5 0*	—	5 6*
New Geduld Deeps	1 9*	1 9*	1 9	1 9*	1 9*
New Kleinfonteins	22 6*	22 6*	22 0*	21 9	22 6*
New Modderfonteins	230 0*	—	—	225 0*	230 0*
New Unifieds	14 3*	—		—	—
Orange Diamonds	1 8*	1 7*	1 7*	1 6*	1 7
Piggs Peak	—	9 0*	9 0*	9 0*	9 0*
Pretoria Cements	46 0*	45 0*	46 0*	46 0*	47 0†
Princess Estates			4 3*	4 0*	
Rand Klips	2 1	2 0*	2 0	2 0	1 11*
Rand Nucleus	1 6*	1 6*	1 6*	1 6*	1 6*
Randfontein Deeps	3 0*		3 0*	—	2 9*
Randfontein Estates	23 3*	23 0*	—	—	23 0
Roberts Victors	29 0*	30 0	—	29 6*	30 0*
Rooiberg Minerals	28 0*	28 3*	28 9*	—	27 0*
Ryan Nigels	3 1*	3 1*	—	3 0*	3 0*
Shebas	5 0*	—	5 0*	5 0*	5 0*
Simmer Deeps	1 0*	1 0*	1 0*	1 0*	1 0*
S.A. Breweries	—	—	—	45 0†	—
S.A. Diamonds	30 0*	30 0*	30 0*	30 0*	30 0*
S.A. Lands	2 10*	2 10*	2 10*	2 10*	2 11
Springs Mines	10 0*	10 6*	10 3*	10 3*	10 6*
Steyn Estates	—	—		9 0*	—
Sub Nigels	7 9	7 9*	7 9*	7 9*	7 9*
Swaziland Tins	—	—	45 0†	45 0†	44 0†
Transvaal and Delagoa	40 0*	40 0*	40 0*	40 0*	40 0*
Transvaal Coal Trust	29 6*	29 6*		30 0†	30 0†
Transvaal Cons. Lands	—	19 0*	—	19 3*	19 0*
Transvaal G.M. Estates	50 0†	50 0†	—	50 0†	50 0†
Tudors	—	—	—	2 0†	
Van Ryn Deeps	35 3*	35 3	35 0	35 6	35 6
Village Deeps	35 6*	35 0*	35 0†	34 3†	34 0†
Vogelstruis Cons. Deeps	0 7*	0 7*	0 9†	—	0 6*
Witbank Collieries	41 6*	41 6*	41 0*	41 0*	41 6*
Witwatersrands	68 6*	70 0	69 0*	69 0*	69 9
Witwatersrand Deeps	56 0	—	55 6*	55 9*	55 6*
Wolhuters	12 3*	12 6*	12 6*	12 3*	—
Zaaiplaats Tins	31 6*	32 0	32 0*	31 6*	31

*Buyers. †Sellers.

National Diamonds.

An extraordinary general meeting of the National Diamond Prospecting and Developing Syndicate, Ltd., will be held at the Board Room, Consolidated Buildings, Fox Street, Johannesburg, on the 9th day of January, 1914, at 10.30 o'clock in the forenoon, when a resolution will be proposed that the Articles of Association be altered in several particulars.

The Berlin correspondent of the *Times* states the traders at Luderitzbucht, German South-West Africa, have made a vigorous protest against the decision of the German Government to acquire all shares in the Diamond Regie, and demand a discussion on the subject in the Reichstag in order to uphold the protests of the German producers, who, it is said, propose to shut their mines. The Luderitzbucht Chamber of Mines argues that the increasing output of the English mines shows the capacity of the market and the fixing of quotas by German producers would be unwise, except by arrangement with the London syndicate, otherwise it would only benefit the English industry.

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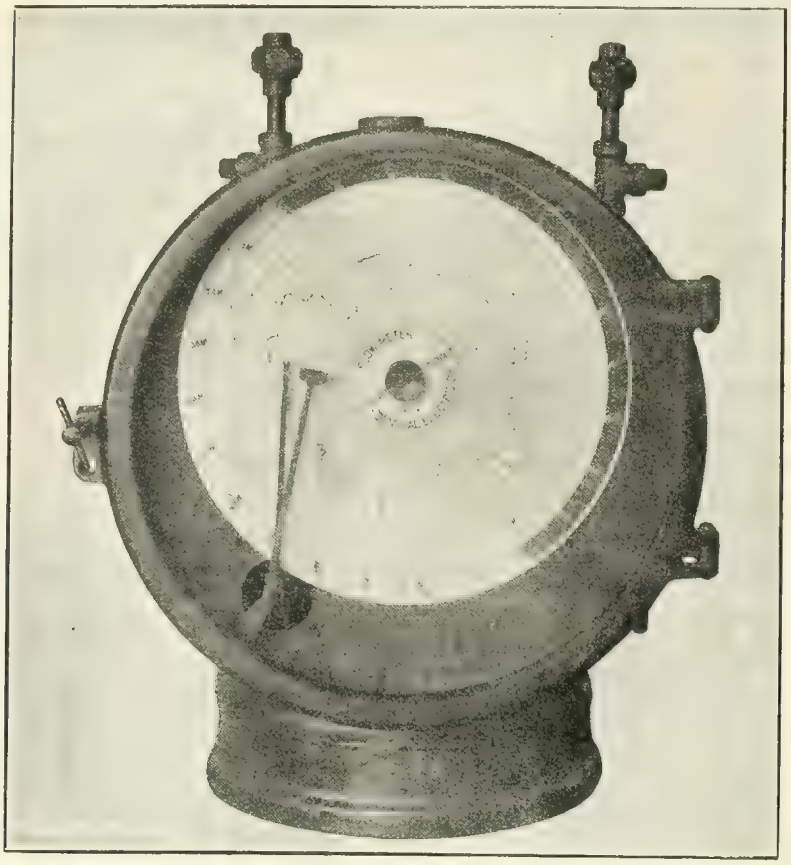

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Engineering Notes and News.

ROCK DRILL ECONOMICS.—II.

An Authoritative Review of the Evolution of the Rock Drill up to the Leyner Machine.

By W. L. SAUNDERS.*

PISTON vs. HAMMER.

We must always bear in mind in comparing piston and hammer drills that the piston drill is handicapped by the load of the piston and steel, which has a certain inertia difficult to overcome in our efforts to reach high speed. The stroke is necessarily short, and as the hole gets deeper this handicap of weight is increased by longer steels, so that we are driven to high air pressures in order to get high speed. High air pressures naturally cost more money than low air pressures, and, as has been shown, if we attempt to save air by compounding we limit the capacity of the drill to force itself through difficult places. In holes at or near the horizontal there is always an added disadvantage in a percussive type of drill, due to the steel dragging in the hole. This will take place even in a clean, straight, round hole. The steel sags, and in sagging, and during the process of rotation, there is considerable friction loss within the hole. All this leads us to high pressures, which is only another expression for greater power. It is safe to say that the piston type of drill has reached its limit when we consider capacity as a limitation when rating efficiency. In down-hole service, especially for deep holes and in soft rocks, piston drills will always be useful. The pumping action of the bit serves to agitate the material at the bottom, especially when mixed with water, and in this way the hole is kept more or less clean under the bit.

NATURAL ADVANTAGES OF HAMMER DRILL.

The study of rock drill economics has led the mechanical engineer into the hammer drill field as one which offered the greater possibilities. The problem was to do more work, and with a lighter machine. The next consideration was to accomplish this with a reduced labour and power cost. All of these conditions have been met, and extraordinary results have been obtained which have materially reduced the cost of excavating rock and ore. We have seen that the process has been one of return to primitive methods. In other words, we have done what is most natural, and that which conforms closest to the laws of Nature is invariably best. The natural way to drill rock is to strike a piece of steel with a hammer. The only reason why the miner does not continue to do things in this way is because he cannot strike a sufficient number of blows. Just in proportion as he uses a heavier hammer does he reduce the number of blows that he is able to maintain, and with the lighter hammer he is brought to an absolute limit. It would seem that the first thought of the engineer would have been to follow the old miner by building a rock drill on the hammer type. He may have thought of this, but the problem proved to be a very difficult one. The first difficulty was to get material that would stand up against this rapid-fire system. Then came the question of rotation, which was not easy to accomplish with a machine of the hammer design. Of equal importance was the question of keeping the bottom of the hole clean, because, the bit being practically stationary at the bottom, the cuttings from the hole would pack between the edges of the bit and the bottom of the hole, and prevent further progress. Jets of steam, of air, and of water were used to discharge the cuttings. Steam has many disadvantages, air is expensive and it creates dust, while water is, in the first place, difficult to introduce into the bottom of the hole; its mixture with parts of the drill results in wear and tear, and to use much water is a disadvantage and an expense in underground work. Uphole work offers less difficulties for hammer drill service than any other. The cuttings drop by gravity out of the hole, and the only disadvantage is dust. Horizontal hole work is that which is most difficult, while with down-holes water thrown into the hole always serves a useful purpose. A mixture of air and water has solved most of the problems arising from the use of hammer drills in mines. This is known as the Leyner system. Air is always available, and is readily conducted in the hole, using either live or exhaust air. Where this air is commingled with water it discharges the cuttings from the bottom of the hole without blowing them away in the form of dust, but by simply reducing them to a puddle condition with enough water only to create a moderate stream, which discharges the cuttings through the orifice of the hole. This keeps the bit cool; there is enough puff to the air to remove the chips, and a long experience under all conditions of service has demonstrated conclusively that a mixture of air and water is more effective in cleaning the hole than even a large stream of water alone. In fact, air is the ideal thing to use, and it would be used alone were it not for the dust, so that the present system introduces only enough water to lay the dust. In doing this we effect economies by using only a small amount of water mixed with air from the exhaust.

MECHANICAL PRINCIPLES EXPLAINED.

The pneumatic tool, especially the type known as the riveter, illustrates the mechanical principles involved in the hammer drill. It is likely that the perfection of the pneumatic tool led to the perfection of the hammer drill. A riveter combines an extraordinary amount of power. Its efficiency is very high, because the hammer speed is high, and the machine is light and easily handled. Its use in steel and iron construction is now universal. Air consumption in a tool of this nature is low in proportion to the work it does, because the thing reciprocated by the air is so light that it is easy to get high speed without sacrificing

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*Abstract from paper read before Butte meeting, A.I.M.E.

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power to overcome inertia. In other words, there is a closer relation between the air pressure and the speed of hammer, with the resultant effective blow. A point not to be lost sight of is that the rapid reciprocation of a flying piston, as in a hammer drill, is very much more easily mounted or held by an abutment than where we have a reciprocating action of a heavy weight, as in the case of a piston drill. The reasons for this are obvious. High speed of a light hammer takes the place of slow speed of a heavy hammer. One is like the rapid reciprocations of a hand hammer, the other the ponderous swing of a sledge. So great an effect is obtained by this rapid, light blow that it has been found practicable to reduce the weight to a figure considerably under 100 lb. in a machine which in drilling capacity compares favourably with a piston drill of two or three times the weight. In this light machine, material alone has not enabled us to cut down the weight, but the light, rapidly moving piston design, with the quick-opening valve, is of equal importance. It would surprise a drill runner of ten years ago to learn that hammer drills are used to day in hard rock, putting in holes 10 and 15 feet in depth without even mounting the drill, it being held in the hand of the operator. Of equal importance in tunnel driving is the fact that by the use of hammer drills the equivalent of heavy machines is placed in the headings mounted upon a light horizontal bar, this bar being easily handled by a few men, yet it affords abutment enough to resist the jar, because the jar has been reduced to a minimum. Heavy upright columns, carriages, and other forms of support were made necessary because of the ponderous pulsations of the piston drill. To be able to use a light bar, placed horizontally, is of the greatest importance in tunnel driving, because it affords an opportunity to begin drilling quickly after a blast and before the muck has been cleared away from the bottom of the heading. A hammer drill is the modern progressive miner. It has practically done away with hand-drilling, and in doing this it has largely increased the field of service. There is no longer any question about the fact that it pays to use power drills in all classes of mining. It is now entirely a question of adapting the system of mining to these light, efficient, handy perforators.

Surprise Gold.

The report of the Surprise Gold Mining Company, Ltd., for the year 1912, presented at the meeting on the 4th inst., states that since the mine was closed down no further mining work has been undertaken, and the business has been confined to realising small portions of the machinery and plant as opportunity for doing so occurs, and endeavouring to lease the mine on tribute. All efforts to tribute the property until recently met with no success, but within the last few weeks the property has been taken up by a syndicate, which is about to undertake prospecting with a view to leasing the mine on a royalty basis. A small proportion of the machinery and plant has been disposed of by sale. A sum of £18,123 has been written off permanent works, machinery, plant and buildings, and this amount has been debited in the profit and loss account, which shows a total debit balance of £28,123. The ordinary expenses of upkeep, standing charges, etc., naturally could not be curtailed on the immediate closing down of the mine; these, however, have now been reduced to a minimum. The Eileen Alannah mine, in which the company is largely interested, is now on the point of ordering its reduction plant, capable of treating a minimum of 5,000 tons per month. A considerable revenue is likely to accrue to the company from this source when crushing operations commence. The development of the Connemara mine, in which the company is also largely interested, was suspended at the end of June in the present year, the ore reserves at that date already amounting to 264,425 tons, of an estimated total value of £419,149, it being also estimated that an extensive additional tonnage can be rapidly opened up when development work is resumed on the erection of a reduction plant. A plant capable of treating a minimum of 6,000 tons per month has been recommended, and will be ordered as soon as the necessary funds for same can be arranged for.

Voluntary Liquidations.

Houtpoort Mining Estate Syndicate, Ltd., Johannesburg.
Grampian Mines, Ltd., Johannesburg.
Pentagon Syndicate, Ltd., Johannesburg

Three facts regarding the Transvaal worth remembering

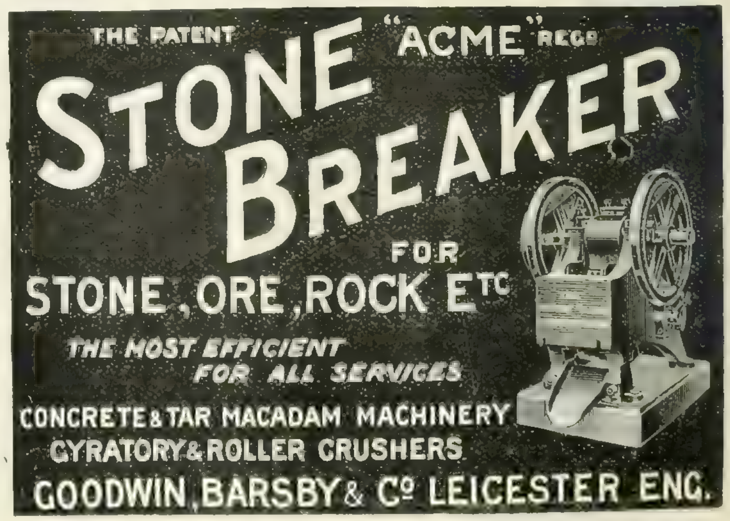
(1) The Transvaal is producing over one-third of the world's gold output.
(2) Transvaal mines have spent 24 millions sterling on machinery and plant.
(3) The *South African Mining Journal* is the official organ of the Mine Managers' Association.

WANTED.

POSITION IN REDUCTION WORKS, on small Property in Outside District, by Hard Working Man with good credentials. Can take entire charge and design and erect small plant. Amalgamating, Cyaniding, Smelting, etc. Experienced in erecting and running Suction Gas Plants. Moderate salary required.—Reply, "CAPABLE," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

New Patents.

562. John Emery Bucher.—Method of producing metals.
563. John Emery Bucher.—Improvements relating to the fixation of nitrogen.
564. John Tulip.—Improvements in the means of attaching side cars to motor cycles and the like.
565. Frederick Victor William Swanton.—Improvements in power producing apparatus.
566. James Snodgrass.—Improvements in the concentration of gold ores.
567. Charles Young Weir.—Improved haulage jockey for trucks for use in mines and the like.
568. Anthony William Richard Schieder, William Spence Wilson, and George Innes Smith.—Improvements in apparatus for a portable chute or stope box for use in underground workings of mines or the like.
569. Otto Stuhang Tonnesen.—Improved means for extracting jumpers, drills and such like.
570. Robert Blakoe.—Improvements in and connected with the wheels of cycles, motor cars and other vehicles.
571. Arthur Joseph Sequin Fisher.—Improvements in percussive apparatus.
572. Fearless Brush Company, Ltd., and Alfred Gerhold.—Improvements in and relating to brushes.
573. Bertram Campbell and Travers Solly.—A new and improved clamp and nozzle holder for water spray or jet, to be used with rock drilling machines.
574. Charles Washington Merrill.—A precipitant for recovering metals from cyanide solutions.
575. Charles Washington Merrill.—Process for precipitating and recovering valuable metal-bearing materials from solutions.
576. Samuel Thomas Tregarkis.—Improved support for light power-driven hammer drills.
577. Robert Caldwell.—Improvements in means for locking skips to prevent their premature tipping.
578. John Gillis Munro.—An improved portable machine for the treatment of diamondiferous gravels and soils.
579. Douglas William Stacey.—An improved process and apparatus for the separating of a solution containing gold or other metals or material from finely crushed insoluble substances.
580. Gysbert Christiaan William Keet.—The road splitter.
581. Guglielmo Marconi, Marconi's Wireless Telegraph Company, Ltd.—Improvements in wireless telegraph transmitters.
582. Hans Andrew Hansen and Joseph Milton Schmueser.—Improvements in linings for ball or pebble mills.
583. Thomas James Ehrhart.—Improvements in lifting rigs.
584. Thomas Hurst.—Electrical recorder for mine bell signals.



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Finance, Commerce, and Industries.

Land Settlement and Irrigation. In the absence of Mr. A. Elton Mills, of Grootfontein College, an interesting paper, written by him, was read by Mr. R. W. Thornton, the Principal of the College, at the third annual Irrigation Congress held recently at Graaff-Reinet. In the course of his paper Mr. Mills said: "Ours is a vast country with a very small white population. Too many wealthy men hold too large areas of undeveloped irrigable land—too conservative to open up their property for closer settlement and lacking in individuality and ability to carry out the work for themselves. It should become the law of our country that an owner of property on which exists an irrigation proposition, who does not develop his land to the satisfaction of the Government shall be obliged to sell his land to the Government, the latter to allot it to the small man, in small sections, for closer settlement. Only one or two such schemes would be necessary to convince every one of its thorough soundness and payability, and if properly organised would make for the country's welfare. What would not hundreds of thousands of men with limited capital give to acquire twenty-five or fifty morgen of irrigable land? Our farms are much too large, too much extensive agriculture is done, and is, therefore, done indifferently and with disappointing results. To prove the truth of this we have only to see what is done on the Sunday's River. There a company has bought up two or three farms along the river, built a weir to divert the flood water over these farms, and sold every inch of ground in advance at £50 per morgen; the sections varying in size from five morgen to two and even three hundred morgen. Now, as land is at present, £50 a morgen seems a high figure to pay for raw, uncleared ground, yet when it is worked up and produced in the second and third years, 10 per cent. is quite a medium return on the capital outlay. It is high time that steps were taken to promote the interests of the man who is the backbone, the mainstay, of the country. Why cannot land, which can be brought under water (yet being without water) is worth £2 to £3 per morgen, be acquired and allotted to the small man at, say, £10 or £12 per morgen. A few figures will show the payability of small irrigable holdings. Let us suppose Government establishes an irrigation scheme, and sells land in blocks of twenty morgen at £10 per morgen. A man invests £200 and proceds to lay down lucerne for either ostriches or dairy farming, or perhaps an orchard, just depending on his locality, and what is best suited thereto. Say he goes in purely for lucerne, to develop his land and estabilsh the lucerne will cost another £6 per morgen—thus £320 is spent. Lucerne yields on an average of eight tons of dry hay per acre per annum; twenty morgen, or twenty-two acres, will yield 346 tons. This, valued at £3 per ton, is £1,038. Working expenses and living has to be deducted from this, yet for such a small piece of ground the profit is handsome. What would not the profit be were the crop fed to dairy cows and pigs (these branches being complementary to each other) or, at present most paying of all, ostriches!

* * * *

Free Freight for Stock. The attention of shippers of live stock under the "free freight" clause of the Ocean Mail Contract is directed to the fact that they will in future be required to observe the following conditions, which are to be read in conjunction with the regulations published by Government Notice No. 723, dated the 30th April, 1913, viz.:—(a) No stock under the age of eight months will be accepted for shipment under the free freight clause. (b) In the interest of the live stock and to minimize the risk of miscarriage to pregnant animals under the conditions of a sea voyage, mares in foal will not be accepted for shipment after the sixth month and cows after the fifth month of pregnancy. (c) In the case of pregnant animals the veterinary certificate submitted to the High Commissioner must specify the degree of the animal's pregnancy. (d) Having regard to the great difficulties experienced on board ship in tending very young calves and foals, these, when accompanied by their dams, will only be accepted for shipment on payment of the Union-Castle Company's usual rates of freight for such young animals. (e) To avoid confusion on delivery there must be distinctive marks on the horns or hoofs of the animals or such other unmistakable marks (of a nature not to be effaced or removed in the course of the voyage, and to be duly entered in the description of the animal) as would obviate any mistake as to their identity, thus: Cattle.—To be branded with number on horn and letter corresponding to the first letter in the surname of the owner. (Polled cattle and young animals without horns to be similarly branded on hoof.) Horses.—To be similarly branded on foot. Pigs.—If not ear-tagged to have owner's name stencilled on crate. Sheep.—Same as pigs. In all cases these identification marks should appear on the pedigree or other certificates. (f) Considerable trouble having been experienced by the company owing to exporters of live stock being insufficiently acquainted with shipping procedure, such exporters are strongly urged to employ some regular shipping agent to carry out the necessary formalities. (g) The certificate of approval issued by the High Commissioner and the relative documents must be lodged with the Union-Castle Steamship Company at least seven days before the stock is required to be delivered alongside the steamer.

* * * *

Results of Maize Experiments. The results of experiments with maize, conducted during the past season at the Rustenburg and Piet Retief Experiment Stations (attached to the Division of Tobacco and Cotton) are now to hand. In conection with Piet Retief experiments, it is interesting to observe that the acid phosphate plots are in advance throughout, and that a plot, unlimed, and treated with phosphates only, takes first place. This plot received the cheapest fertilizer used, costing about 6s. Three crops have been grown from the one dressing of fertilizer, and the fourth crop yields 828 lb. of mealies from one-quarter of an acre, equal to 16½ bags per acre. The same plot also gave the best results in all previous crops. All the plots received the same attention, having been cultivated four times during the season. The soil is a brown loam and was ploughed an average depth of ten inches. Furrows were made and kept open between each plot to prevent any soil or fertilizer washing from one plot to another. The distance between plots is six feet. The mealies were planted in drills three feet apart and an average distance of two feet ten inches in the drill. The crop came up very uniform, but the plots treated with phosphates soon took the lead both in growth and colour, and remained so throughout.

* * * *

Unionist Party Club Labour Bureau. The Labour Bureau connected with the Unionist Party Club, which has been working tentatively for some time, has now been placed on a permanent basis. A special sub-committee, consisting of Mr. Emile Nathan, M.L.A., Mr. Cecil Murray, Mr. A. J. Strong, Mr. A. W. H. Peacocke, and Mr. A. Rodger, have taken charge and have appointed Mr. Nuna Davis as manager. The old cloak-room has had its partitions removed and has been fitted up as a commodious office. Elaborate registers for the use of employers and applicants have been prepared; these show at a glance the vacancies and the qualifications of those in search of employment. The Bureau is so arranged that it can be shut off from the main club premises and can be approached by a separate entrance, so that applicants who do not want their business known are ensured of privacy. There is at present a constant stream of persons desiring employment, who appear to be well qualified for the posts they seek; this matter of qualifications is one to which the committee attach great importance. A circular has been sent to all firms in town and to the mines, and has met with a cordial response. Already between twenty and thirty men have been found billets both on the mines and in town.

Automobile Notes.

The Motor Exhibition at Olympia.

The twelfth international exhibition, organised by the Society of Motor Manufacturers and Traders, Ltd., in connection with the Royal Automobile Club, was held, in London, at Olympia from November 7 to 15. Some idea of the importance of this show will be understood when it is borne in mind that it now constitutes the world's largest trade exhibition, and this is the more significant because it deals with the youngest industry. Although there were not anything like radical departures in new designs to be noted, there were various improvements which showed that our manufacturers, as well as foreign rivals, who also had many fine cars on view, are determined to make the automobile a thorough engineering success in all its details. It was also observable that in many cases prices have been reduced, and in point of fact, although there was ample evidence of the luxurious car, costing £1,000 and more complete, for those who are not obliged to study ways and means, the greater proportion of the designs shown indicated that manufacturers are intent upon catering for the man of strictly moderate means, whether he desires to ride his car for pleasure or business purposes.

* * * *

No fewer than 349 firms exhibited; of these thirty-seven represented the coachbuilding trade, a similar number being associated with tyres and wheels; 149 firms displayed accessories, while those showing cars and chassis were 119, and the other exhibitors comprised the technical press.

* * * *

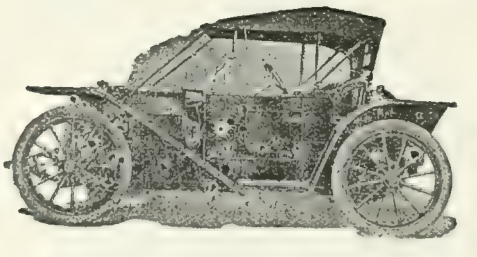
Needless to say, the exhibits throughout were marked by very high-class workmanship. The display was of a thoroughly representative character, comprising cars suitable for the accommodation of two, four, or seven persons, with a corresponding variation in power and price. The needs of the medical man, the tourist at home and abroad, and the ever-increasing user of the town carriage are all studiously cultivated by makers. As already stated, the man of moderate means is looked upon by manufacturers as their principal customer, and the show of 1913 was a striking demonstration of the resolve to still further popularise the automobile for the middle-class man.

* * * *

Self-starters and electric-lighting outfits predominated as the leading improvements this year. In addition, praiseworthy attention has been given to the question of accessibility of the mechanism. Time saving is aimed at by a good disposition of working parts, automaticity of the functions of lubrication, ignition, and carburation, and by the growing use of detachable wheels and rims. Metal wheels are now very general, and tyres are rather larger than before. As for comfort, the suspension shows here and there better design in the road springs themselves; also an alteration of pattern in a few instances, and a wide application of supplementary springing devices. Further, there is plenty of scope as to rake and height of seats, the width of doors and windows, while not a small item is the number of car makers who, if they do not actually include dynamos for lighting the car, have provided brackets so that they can be attached if required. Self-starting devices are gaining ground, and the fashion of selling a car complete, ready for the road, is also to be observed.

* * * *

Mechanical changes are not particularly striking, existing designs giving so much satisfaction as to make the value of changes rather questionable. It is for this reason that the majority of the exhibits reveal but slight collective modification, with incidental small experiments here and there. Four-cylinder engines predominate, with sixes a good second, and monobloc casting is generally adopted. A slight tendency towards reducing the stroke-bore ratio is shown equally with a decided quietening of gearing and reduction of friction. Working parts are adequate and well protected, and the 1914 chassis are strengthened to suit the highly efficient modern engine and the hard service to which cars are put as a matter of course nowadays. Distinction in style is more noticeable this year than before, and pointed radiators, sloping bonnets, and curved dashes combine with elegance in style and tone in coachwork. There is still some hesitation amongst makers as to which is the better, three or four forward speeds. The greater number is, however, becoming pretty general, especially with cars of moderate power. It will be found that gear boxes and differential casings are quiet and oil-retaining, and that provision for lubricating all working parts in the chassis is generally found.



The K-R-I-T Car.
4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
'Phone 1434.

S.A. Oranges in London.

We notice that Mr. Poupart, of Covent Garden, advertises Naval oranges from the Cape as the "finest in the market,'' and also naartjes from the Cape and Natal. The "Daily Telegaph" has a column article on South African oranges. and quotes Mr. Poupart's opinion that "cheap oranges from South Africa are bound to come." At the time it was not possible, according to the "Telegraph," to buy in London really good South African oranges for less than 2d., or 16s. 8d. per 100. The oranges from Clanwilliam and Montagu were reported as standing "well to the fore as regards yield and quality." Oranges from Rustenburg had not landed in good condition, but the "Telegraph" looks to a big development in the industry. "If," it says, "the Colonials take for their model the perfect fruit of Denia, success is surely theirs. There can be no doubt as to the popularity of sweet oranges in the summer. South Africa can produce them, and the British public will show their appreciation of the fruit in a practical manner."

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Diamond Trade Conditions.

From a Hatton Garden correspondent the *Financial Times* has received some notes on the conditions prevailing in the diamond trade, in which, while describing business as very slack, he asserts that the market is healthy and contends that the views that have been expressed in some quarters are unduly pessimistic. He points out that the United States purchased, before the new tariff came into force, about 60 per cent. more than usual at the time of the year, and that as manufacturers, for the time being, over-produced to supply the abnormal demand, it is not surprising that there is now a period of reaction during which stocks on the other side are being absorbed. The correspondent adds: "The imports of precious stones into the United States already exceed the total amount imported during the whole of last year. Given normal trade conditions the American market will not in the least be affected by the increased duty. Both the Amsterdam and Antwerp markets are adopting a waiting attitude and have the fullest confidence in the London Syndicate to maintain prices. The Syndicate is experiencing very little difficulty in disposing of its goods at current prices. American buyers, having purchased so largely during the summer months, were not expected on this side till after Christmas; nevertheless the Syndicate last week sold to two American firms about £60,000, and various other buyers are in the market awaiting their turn. The Syndicate has readily disposed of its Wesselton and Jagersfontein shipments and the applications for Kimberley are again numerous. Bultfontein has not been shown, the Syndicate deeming it advisable owing to the demand not being so great as usual to withhold these goods for the time being, thereby considerably strengthening the market. The depression has been most acutely felt in the sale of very small stones. This has particularly affected the market in German produced goods, which, as is well known, consist only of small sizes. The production, however, is in firm hands and no trouble need be anticipated on this score."

The South African

'Mining Journal'

Is the Authority on all Metallurgical Subjects, and is at once a - - - -

Newspaper and a Review.

- - Write for Specimen Copy. - -

ADVERTISEMENT RATES ON APPLICATION

Contracts Open.

Tenders are invited by the end of December for the following: Erection of a New High School for Girls, Pretoria; erection of a Boarding-house at the New Girls' High School, Pretoria; erection of a school for 100 pupils and teachers' quarters at Morgenzon Township (alternative tenders wood and iron, brick-lined, and local brick); erection of a dispensary at the Johannesburg Hospital; erection of a kitchen at the Johannesburg Hospital; erection of a school for 64 pupils and teachers' quarters at Leeuwfontein No. 140 (alternative tenders in wood and iron, brick-lined, and local brick); additional accommodation for domestic science at Cleveland High School, Johannesburg; erection of caretaker's quarters at Girls' High School, Pretoria; drainage, etc., at the Government Cookery School, Schoeman Street, Pretoria; erection of a school for 100 pupils and teachers' quarters at Uitvlucht No. 63 (alternative tenders in wood and iron, brick-lined, and local brick); erection of a Jewish school for 600 pupils at Doornfontein, Johannesburg; erection of a school for 250 pupils at Van Ryn; erection of a fever hospital at Johannesburg; additions to the school building at Bloemhof.

East Rand Proprietary Mines, LIMITED.

(INCORPORATED IN THE TRANSVAAL.)

DIVIDEND No. 17.

NOTICE IS HEREBY GIVEN that a Dividend of 12½ per cent. (*i.e.*, 2s. 6d. per share) has been declared by the Board of Directors for the half-year ending 31st December, 1913, payable to all Shareholders registered in the Books of the Company at the close of business on the 31st December, 1913, and to holders of Coupon No. 17, attached to Share Warrants to Bearer.

The Transfer Register of the Company will be closed from the 1st to the 7th January, 1914, both days inclusive.

The Dividend Warrants will be paid to South African Shareholders on or about the 4th February, 1914.

Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on surrender of Coupon No 17 at any one of the undermentioned Offices:—

(a) Head Office of the Company, Johannesburg.

(b) London Transfer Agency of the Company, 4 London Wall Buildings, London, E.C.

(c) Paris Correspondents of the Company, Credit Mobilier Français, 30 and 32 Rue Taitbout, Paris.

Coupons presented at the Head Office in Johannesburg must be accompanied by an affidavit or statutory declaration, stating the full name and address of the owners of the Share Warrants from which such Coupons have been detached.

Coupons must be left four clear days for examination, and may be lodged any day after the 3rd February, 1914.

Affidavit forms may be obtained on application at the Head Office of the Company, Farrar Buildings, Johannesburg.

By Order of the Board,
J. D. H. LANG,
Secretary.

Head Office, Farrar Buildings, Simmonds Street,
P.O. Box 742, Johannesburg. 17th December, 1913.

East Rand Proprietary Mines, LIMITED.

(INCORPORATED IN THE TRANSVAAL.)

£1,500,000 5 per cent. Debentures.

NOTICE IS HEREBY GIVEN that INTEREST at the rate of Five per cent. per annum for the six months ending 31st December, 1913, will be payable at the Office of the Company to all Debenture Holders on and after the 5th January, 1914, on surrender of Coupon No. 6, attached to the Debenture Bonds.

By Order of the Board,
J. D. H. LANG,
Secretary.

Head Office, Farrar Buildings, Simmonds Street,
P.O. Box 742, Johannesburg. 17th December, 1913

Breyten Collieries, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Declaration of Interim Dividend No. 2.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 10 per cent. (Two shillings per share), amounting to £9,000, has been declared for the period ending 31st December, 1913, payable on 29th January, 1914, to Shareholders registered in the books of the Company on 31st December, 1913.

The Transfer Books of the Company will be closed from 1st to 7th January, 1914, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

By Order of the Board,
THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED,
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg,
19th December, 1913.

The Sub Nigel, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Declaration of Interim Dividend No. 3.

NOTICE IS HEREBY GIVEN that an Interim Dividend of Two and a half per cent. (Sixpence per share), amounting to £10,789 10s. 0d., has been declared for the six months ending 31st December, 1913, being at the rate of 5 per cent. per annum, payable on 12th February, 1914, to Shareholders registered in the books of the Company on 31st December, 1913.

The Transfer Books of the Company will be closed from 1st to 7th January, 1914, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

By Order of the Board,
THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED.
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg,
19th December, 1913.

The Simmer & Jack Proprietary Mines, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Declaration of Interim Dividend No. 23.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 6¼ per cent. (1s. 3d. per share), amounting to £187,500, has been declared for the six months ending 31st December, 1913, being at the rate of 12½ per cent. per annum, payable on 12th February, 1914, to Shareholders registered in the Company's books on 31st December, 1913.

The Transfer Books of the Company will be closed from 1st to 7th January, 1914, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

Holders of Share Warrants to Bearer are informed that they will receive payment of the Dividend on presentation of Coupon No. 23, either at the Offices of the African Banking Corporation, Limited, 63 London Wall, London, E.C., or at the Offices of The Consolidated Gold Fields of South Africa, Limited, at 12 Rue des Pyramides (being the Paris Agents of the Company). Coupons will be payable at any time on or after 12th February, 1914, and must be left for examination at either of the foregoing addresses at least four clear days prior to payment being made.

By Order of the Board,
THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED,
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg,
19th December, 1913.

The Knights Deep, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Declaration of Interim Dividend No. 17.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 5 per cent. (One shilling per share), amounting to £37,176 6s. 0d., has been declared for the six months ending 31st December, 1913, being at the rate of 10 per cent. per annum, payable on 12th February, 1914, to Shareholders registered in the Company's books on 31st December, 1913.

The Transfer Books of the Company will be closed from 1st to 7th January, 1914, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

By Order of the Board,
THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED.
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg,
19th December, 1913.

Robinson Deep Gold Mining Company, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Declaration of Interim Dividend No. 22.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 12½ per cent. (2s. 6d. per share), amounting to £125,000, has been declared for the six months ending 31st December, 1913, being at the rate of 25 per cent. per annum, payable on 29th January, 1914, to Shareholders registered in the Company's books on 31st December, 1913.

The Transfer Books of the Company will be closed from 1st to 7th January, 1914, both days inclusive.

The Dividend will be payable to Shareholders on the South African Register by Warrants to be issued from the Head Office of the Company in Johannesburg, and to Shareholders on the London Register by Warrants to be issued from the London Office of the Company.

Holders of Bearer Share Warrants are informed that they will receive payment of the Dividend on presenting Coupon No. 22 either at the Offices of the African Banking Corporation, Limited, 63 London Wall, London, E.C., or at the Offices of The Consolidated Gold Fields of South Africa, Limited, at 12 Rue des Pyramides (being the Paris Agents of the Company). Coupons will be payable at any time on or after 29th January, 1914, and must be left for examination at either of the foregoing addresses at least four clear days prior to payment being made.

By Order of the Board,
THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED,
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg,
19th December, 1913.

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Notes and News.

Sir Lionel Phillips.

The condition of Sir Lionel Phillips, now that the second bullet has been extracted, is, in the circumstances, most favourable. At the time of going to press on Tuesday, we learned from Mr. Harold Phillips, who had only left the Hospital five minutes previously, that Dr. Rogers and the other doctors were satisfied with the good night that Sir Lionel passed. He was sleeping peacefully and everything was going on as favourably as could be expected.

* * * *

The Chamber of Mines and Sir Lionel Phillips.

Speaking on Monday at the ordinary meeting of the Chamber of Mines—the first after the attack on Sir Lionel Phillips—the President, Mr. John Munro, said: "Before proceeding to review the report of the Executive Committee for the three months ended November 30, I wish to refer to the outrage committed on Sir Lionel Phillips on Thursday, the 11th instant. Sir Lionel Phillips has, almost since its inception, taken a prominent part in building up the industry with which we are connected, and, as president, has guided the policy of the Chamber for several years. He is still a member of the Executive, and his mature judgment on matters coming before it is eagerly sought by its members. I know I am voicing the unanimous opinion of the Chamber in expressing the abhorrence with which we regard the attempt on his life, and in extending to him, to Lady Phillips and family, and to his colleagues in the management of the great corporations with which his name is so intimately connected, the Chamber's deepest sympathy, and in expressing the earnest hope that he may attain a speedy restoration to health."

* * * *

Labour Facts.

The German Labour Department has recently issued a report, says the Labour Department report for November, giving the results of an exhaustive investigation into the scope and methods of the statistics relating to labour issued by the chief industrial countries. The subjects discussed are the state of employment, labour exchanges, unemployment, immigration, emigration, the movements of seasonal workers, trade unions, labour disputes, conciliation and arbitration, collective labour agreements, wages and hours of labour, labour of women and children, homeworkers, prices of commodities, cost of living and housing. The countries included in the report are as follows: Great Britain, United States, France, Italy, Belgium, Holland, Austria, and Germany. Under each subject the chief official publications of these countries are described and analysed, the forms used in collecting data being reproduced. In a final note the results obtained are compared and discussed. The report is the twelfth and concluding volume of the series.

* * * *

Bushveld Tins.

The Bushveld Tin people are still waiting to raise money to reconstruct the company. The annual meeting was held this week, and the report presented had the following, *inter alia*:—The capital remains the same, viz., 300,000 shares of £1 each, of which 50,000 shares are in reserve. No change has taken place in respect to the company's property since last report. The company's portion of the farm Enkeldoorn No. 373, district Pretoria, in area 3,219 morgen 56 square roods (freehold), is still in charge of a caretaker, and the plant and buildings thereon are being maintained in good order. There is nothing on the accounts that calls for particular mention, and apart from charges of a general nature, there is very little change in the year's accounts. Expenses have been kept down to the lowest possible point. In view of the advisability of a readjustment of the company's finances as soon as opportunity offers, your directors have not made any provision for depreciation in the accounts for the present year.

A Big Stone from the River Diggings.

A handsome find has just been registered on the Pniel Diggings last week-end, a lovely diamond, weighing over 229 carats, having been discovered by F. J. van Zyl. The stone is a fine octahedron, with a slight tinge of yellow, and realised £10 per carat, or £2,300. This find is expected to be followed by an accession of diggers. The company owning the estate, which is 92 square miles in extent, and embraces the well-known diggings, have recently extended the Vaal water service for the convenience of diggers, and have carried out active prospecting. The latest area thrown open to operation is the Outspan, a field of exceptional promise. In a trial wash, several diamonds were found, and now a water-pipe line has been laid for a distance of about two miles from the river, and a service installed to enable this large area to be thoroughly prospected.

* * * *

United Rhodesian Gold Fields.

Mr. C. F. Rowsell, in his speech at the United Rhodesia Gold Fields meeting, had interesting particulars to impart regarding sundry of the company's subsidiary interests, and, generally, reported an improved and improving position. Its holding of Cam and Motors is now 11,750 shares. Mr. Rowsell looks forward to this company having "a very prosperous future," and has no doubt of being able to realise the holding "at a very substantial profit." The Central Penhalonga, another subsidiary interest, "has possibilities." The Golden Kopje, with 310,746 tons of 8-dwt. ore developed, "is likely to become an income-producer at an early date." The Inez has been let on tribute, and "more satisfactory results are being obtained"; the Jumbo is "crushing and making monthly profits," but the discovery of any payable values at depth is problematical. Finally, the Mayo, one of the United's largest interests, is "in a strong position," its chief Rhodesian assets being large holdings in the Shamva Mine and Golden Kopje. The company during its career (it was formed by the United Rhodesia) has paid dividends amounting to 70 per cent., and Mr. Rowsell has no doubt, when times improve, that it will be again in a very satisfactory position. Concerning the value of the United's assets, Mr. Rowsell observed that the board were most anxious not to sacrifice the company's assets in paying off the debentures.

* * * *

Wankie Colliery.

The annual statement of the Wankie Colliery, just issued, shows that there is an advance of something like 50 per cent. in the turnover, this amounting to £121,000, as against £84,000. The depreciation allowance of £18,500 is well on the way towards double the 1911-1912 sum. Administration expenses absorb £800 more than before, while, with the Debenture debt reduced by £5,000, interest is £300 down. In the end the net profit comes out at £36,900, as against £25,000. It is explained that sales were considerably affected by the drought; an interesting point is that the quantity disposed of to mines and private individuals shows an increase of 14,900 tons, while railways bought 7,400 tons less than during 1911-12 owing to the introduction of high-class heavy locomotives. Additional long term contracts for coal and coke are under negotiation, the directors state, and "if entered into will result in a substantial increase in the output."

* * * *

Tin Dressing in Cornwall.

The description of the Geevor mill, which formed the subject of a paper by Mr. Horace J. Nichols before the Institution of Mining and Metallurgy in mail week, brought together a large meeting, and led to an animated discussion. The authors, from the mill as remodelled by them, claimed to get an extraction of 78.5 per cent. of black tin, which, as one speaker pointed out, was second only to the claim advanced by Mr. Joseph Paull of an 80 per cent. recovery at South Crofty. The paper, however, did not state what was the actual amount of tin sold at the ticketings from the ore treated, but the author promised to supply these data in his reply. In view of the approval with which the novel features of the plant were received by some of the speakers, it came as a great surprise when at the close of the meeting Mr. Oliver Wethered, Chairman of the Geevor, stated that he felt it due to the responsibilities of his position to say that the paper had been presented without reference to himself, and that since the date with which it dealt the mill had been remodelled on ordinary Cornish lines, and that Dolcoath practice generally had been adopted. In particular, what were described as two features of the plant novel to Cornwall, the Hardinge mill and Richards-Janney classifier, were no longer employed. Mr. Wethered went on to say that he would be delighted to arrange for a test to be made in London of the treatment of the ores on the lines developed by Mr. Nichols and the system at present being worked at Geevor respectively, and that if the discarded system showed better results he would willingly pay the whole cost of the experiments. The further discussion to the paper and the author's reply will be followed with much interest.

* * * *

Mosquitoes and Malaria in Rhodesia.

In the course of his latest report on public health in Rhodesia, Dr. A. M. Fleming, particularly emphasises the disregard of precautions against mosquito-borne diseases. "Of the 2,283 European admissions to hospitals," he says, "770 were on account of malaria, amongst whom there were 6 deaths, giving the low mortality of ·78 per cent. This, however, does not in any way represent the malaria incidence in the country generally, as the majority of cases, especially those occurring in rural districts, are treated in their own homes or on the veld, and rarely in the remoter parts is a doctor even called in to attend. This is borne out by the fact that, although only six deaths have occurred in hospital, showing that when treated malaria is seldom a fatal disease, still 22 deaths were registered as due to this cause in the whole of the territory during the year. Though it cannot be said that malaria is increasing, admissions to hospitals from this cause being only in the proportion of 28·63 per 1,000 of the population, as compared with 31·31 per 1,000 in 1911, still it is an unfortunate fact that in many of the districts little or no attempt is even now being made to apply prophylactic measures for its prevention. The causes of malaria have been so thoroughly ventilated in the past few years, and are now so generally known, that it might be thought measures for its prevention, which are simple and inexpensive to carry out, would have received more attention from the public than they do to-day. The striking result attained by the enforcement of systematic anti-malarial precautions in such places as the Panama Canal zone, Ismaliah, Hong Kong, and many other places, is ample testimony of the efficiency of these measures, and the comparative health which can be enjoyed by the inhabitants who profit by these advantages."

* * * *

South Australian Mining.

In delivering the Budget statement in the South Australian Parliament, the Treasurer made known the results of the working of the mines in 1912 and the developments at the various mines. The total value of the mineral production was, so far as can be ascertained, £595,670, being over £45,000 in advance of the value of the production for 1911. This is mainly accounted for by the rise in the copper market and the average of "standard" copper for the year being £73 1s. 3d. per ton. "The time seems favourable for the re-starting of some of our old copper mines," says the Treasurer, "which though long idle are known to be far from exhausted, and it is good to hear that steps are being taken to raise capital for the re-working of the Kapunda mine. A discovery of very rich silver ore at Miltalie, in the hills behind Cowell, has called attention to the mineral producing possibilities of a considerable area, which has long been known to be a metalliferous region, but in which, so far, prospecting has been inclusive and intermittent. It is gratifying to report that a systematic scheme has been evolved for the thorough prospecting of this locality. No fresh discoveries of gold have yet been made, and returns continue small." The radium mines of the State have made material progress during the year. At Mount Painter recent prospecting work has proved the existence of a much more extensive deposit than was formerly known. The ore body is being developed with satisfactory results, and parcels of ore are being exported. There has been a considerable activity in the Radium Hill district, near Olary, the success of the Sydney company in actually marketing their prepared radium salts having given impetus to the search for radio-active ore in this field. Though no other companies have yet reached a productive stage, it has shown that the distribution of the radio-active minerals is wider than was supposed. Attention is again being called to the large brown coal deposits of the State, and it is to be hoped that, as in Europe and America, these deposits may be put to economic uses.

* * * *

The Seymour Library.

At a meeting of the Chemical and Metallurgical Society last week, Mr. Andrew Crosse said he was by no means satisfied with the condition of the Seymour Library This library should be not only for students' use but for reference. They wanted more books, and they wanted the newest books. In many cases the latest books they had on any subject were ten years old. On the previous day he wished to refer to a book on acetylene, and found that the latest book they had was one published before the war. A technical library was not of the slightest use unless it contained the very latest books. They could not all have large technical libraries, and they should have access to books where they could find any information required. They wanted the very newest information available at so important an industrial and mining centre as Johannsburg. It was the duty of the Government to see that the library was kept up-to-date, so that they should be able to get the information required. Mr. H. A. White, a member of the governing body, said that a large order was being sent forward for books, and he would be pleased to receive suggestions from members as to books that should be obtained.

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Mining in the Congo.

The Comite Speciel du Katanga, which is composed of representatives of the Belgian Government, and Compagnie du Katanga, and the Tanganyika Company, and which plays a more administrative than sovereign rule since the Congo State was taken over by Belgium, states that Belgian prospecting enterprises were very active in 1912. Prospecting rights were also granted to a purely German group and a French group. The former was formed under the auspices of the Brussels branch of the Deutsche Bank and the latter under the lead of the Comptoir National d'Escompte of Paris, the Societe Generale, and the firm of Benard and Jarilowsky. According to the official report of the Comite Speciel, the German undertaking has hitherto not claimed any mineral fields or asked for any prospecting licences, although the general prospecting right and the right of laying claim to mineral fields will expire on December 15, 1914. The Belgian prospecting companies, in which German capital is frequently interested to the extent of one-half, have made a number of promising finds, and have secured claims to large fields. Thus the Societe Miniere Congolaise, which was constituted by the Dresden Bank and the Nagelsmackers Bank, has obtained about 192,000 acres at Ruwe and 100,000 acres at Mutendele, and the Societe Industrielle et Miniere du Katanga, in which the Disconto Gesellschaft is interested, has secured five blocks of land, of a total of nearly 500,000 acres. The last-mentioned company took over the mining rights of the Societe Belgo-Katanga, and reconstituted itself under the title of the Societe Belge Industrielle et Miniere du Katanga. It is this particular company which discovered the diamond pipes on the Kundelungu Plateau, so that German capital, through the Disconto Gesellschaft, is also concerned with the finds of diamonds in the Congo. In addition, the Societe Anversoise pour la Recherche des Mines au Katanga, in which the Frankfort Metal Company is interested, obtained claims on six fields of 370,000 acres. The great activity in prospecting for minerals is shown by the fact that no fewer than 369 special licences were granted in 1912, seventy-six of which were for copper, thirty-three for copper and iron, and the remainder for iron and manganese, gold, silver, platinum, tin, coal, and petroleum, diamonds, cobalt and nickel, lead and salt.

TOPICS OF THE WEEK.

THE NATIVE LABOUR OUTLOOK.

Though native labour is now being recruited in increasing numbers the position at the beginning of the month was extraordinarily serious. On the 31st of August there were 180,631 natives in the employ of members of the W.N.L.A., including natives in the service of contractors, but excluding those in the employ of members in the districts of Barberton, Breyten, and Rooiberg. This figure was reduced on the 30th of November to 169,535, a loss of 11,096 over the quarter. Taking the gold mines alone, there is a loss of 10,654 for the quarter, and a total loss of over 50,000 natives since the 31st of May last. The number of recruits coming from their homes to the mines has shown a marked decrease for the six months ending the 30th of November, as compared with the same period of last year, this decrease being 5,325 East Coast natives, 8,393 tropicals, and 10,499 Union natives. As recruiting in tropical areas has been prohibited since March last, and the wastage through natives returning to their homes steadily goes on, there were at the end of November only 14,779 natives from these areas working on the mines, as compared with 20,375 at the end of last year. The death-rate among these natives has been reduced from 50·25 per 1,000 per annum in June last, to 20·9 in November. In June last the gold mines began the systematic inoculation of these natives with Sir Almroth Wright's prophylactic, and this gradual decrease in mortality must to a great extent be attributable to that inoculation. At the Chamber of Mines meeting on Monday, Mr. Munro, the President, said that acclimatisation has no doubt also contributed to the satisfactory decrease in tropical mortality, as the natives now on the mines have been on the Rand for nine months or over. Colonel Gorgas and his assistants have commenced their investigation of the health conditions prevailing on the gold mines, and every facility is being afforded them to study the question, so that they can advise the Chamber what further steps should be taken to improve the living and working conditions not only of the natives, but of all employees working on the mines. The effect of the labour shortage on the drill question drew from Mr. Munro an important statement on Monday. He said, *inter alia*:—" The continued depletion of the native labour force on the mines has given rise to considerable anxiety in the minds of all concerned with the welfare of the industry. At the same time, it would be a great mistake to take too gloomy a view of the position, as it cannot be regarded altogether as an unmixed evil, and though it might be putting it rather strongly to say that it will eventually prove to be a blessing in disguise, it has achieved at least one good result. The extreme shortage which has existed during the past five months has brought home to us the very indifferent results which are being obtained from machine work, and this is a matter which is now receiving the careful attention of all concerned with the gold mining industry. It is becoming generally recognised that the standard of efficiency for machine work has been low, and even with drills of the reciprocating type there is considerable scope for improvement. In addition to this, the more recent types of small hammer drills which have been introduced on the Rand show indications of giving better results than any which have been previously tried. Where the angle of dip is not too steep, these drills are capable of working in as narrow stopes as hammer boys, and in view of the enormous footage obtained by the drill as compared with the footage accomplished by a native with a hammer and jumper, it is obvious that we have here plenty of scope for the reduction in the number of natives required underground. Of course a sharp drop in the native labour supply such as we have experienced is bound to cause considerable dislocation, but if in the end it is found that the mines as a whole can be worked more economically with a much smaller number of natives, then the future gain to the Rand will be considerably greater than the loss we are sustaining at the present moment." This may be taken to mean that the small drill problem is now at last within measurable distance of solution, and that consummation combined with improved recruiting results promises soon to relieve the whole labour situation.

RAND DIVIDENDS IN 1913.

Up to the time of going to press dividend announcements for the Randfontein—Langlaagte group of mines had not come to hand, but it is to be noted that the distributions of Rand gold mines which had announced dividends up to Tuesday evening in respect of the 1913 operations amounted to a total of £8,052,902, as compared with £8,000,493 for all mines for 1912. Considering the difficult year now brought to a close this must certainly be regarded as a satisfactory showing. At this juncture it should be of considerable interest to examine the group figures, or rather the figures for such groups as have declared their full distributions for the year. Figures for the Central Mining and Investment Corporation, the premier group of the Witwatersrand which distributes about 50 per cent of the money paid out by the mines of the Main Reef series in the form of profits, may first be considered. For these companies the total amount paid out is £4,074,094, as compared with £3,927,678 declared by the same companies for 1912. Taking the companies individually, four mines—the Bantjes, Durban Roodepoort Deep, Robinson and Village Deep—distribute less in respect of the 1913 operations than they did last year. Two subsidiaries—the Crown Mines and Village Main Reef—distribute the same amounts as last year; and the remaining seven companies—City Deep, Ferreira Deep, Geldenhuis Deep, New Modder, Nourse Mines, Modder B. and Rose Deep—announce increases. Amongst the most noteworthy advances are those of the Modder B. (£315,000 as against £140,000), the Nourse Mines (£234,549 as compared with £124,173), and the Ferreira Deep (£490,000 as against £402,500). The Nourse Mines aggregate is much greater by reason of the declaration of three dividends this year instead of two in 1912, whilst the Ferreira Deep's aggregate is increased by reason of the inclusion of the Ferreira's profits this year. The Johannesburg Consolidated Investment subsidiaries reflect in their dividend total the excellent profits earned during the year, and the total for the group stands at £780,831 as compared with £473,250 in 1912. Two names—those of the Consolidated Langlaagte and Van Ryn Deep—figure on the dividend list for the first time, and these companies between them distribute £169,375. As to the other subsidiaries, with the exception of the New Rietfontein, which company announces 5 per cent. less, and the Glencairn and New Unified, which declare the same amounts as in 1912, announcements are higher this year than last. The Consolidated Gold Fields aggregate is less. The Knights Deep dividend for the December quarter has been reduced to 5 per cent., and the Simmer records a decline of £37,500, the Robinson Deep's amount remaining at the same. The East Rand Proprietary Company's distribution of £611,472, or 25 per cent., is the same as last year, whilst the New Kleinfontein re-enters the dividend list with an announcement of £72,750, which is 2½ per cent. better than last year's declaration. The Brakpan Mines announcement reflects the lesser profits earned of recent months by distributing £243,750 instead of £300,000 in 1912. The two Albu dividend distributors, Meyer and Charlton and Van Ryn have each improved their amounts, the former by £20,000 and the latter by £12,500. As regards the mines under Neumann control, the Main Reef West, which in 1912 paid out 12½ per cent., is this year a non-declarant. The Wit. Deep has improved its distribution by £55,000, but the Wolhuter's declaration is £86,250 against £150,500. Of the "independent" companies the City and Suburban's amount is the same, but the New Heriot's payment is £80,500 as against £92,000. It will thus be seen that the dividend harvest for the year is already greater than that of 1912, and there are still one or two important declarations to be announced. These are the outstanding features of the returns so far declared, and having regard to the troublous year passed through both the aggregate and the figures for individual mines must, we repeat, be adjudged satisfactory. As to the dividend outlook for the current year, it cannot be too strongly insisted that the profit-earning achievements of the mines are in the main decreed by the state of the coloured labour complements. Natives are now, we understand, coming forward somewhat more readily, and if the influx is maintained for the next two or three months it will give a good beginning to the dividend aspect of the year which commences next week.

"Ore in Sight."

In the recommendations of the Committee on Standardisation of the Mining and Metallurgical Society of America, the chairman, Robert Peele, points out that the term, "ore in sight," as commonly used in the past, appears to possess so indefinite a meaning as to discredit it completely. If "ore in sight" means, for example, ore blocked out on four sides, why not say as much, and let it go at that? In estimating the value of the ore in a mine, says Prof. Peele, the character of the deposit must be taken into account and kept clearly in view. The "personal factor," insisted on by some engineers, may, and often does, convey a substantial meaning to members of the profession; but, to the client, as a rule, the expression can have no useful significance. In stating the resources of a mine, a classification of the ore, known or presumed to exist, is essential. Mr. Peele's committee, therefore, makes some very cogent recommendations under this head: (1) That the term "ore in sight" be definitely abandoned. (2) That engineers be urged to set forth clearly all the essential facts on which are based their conclusions as to the quantity and value of the ore in the mine. (3) That the following classifications be adopted: (*a*) *Positive ore* is ore which is exposed and properly sampled on four sides, in blocks of reasonable size, having in view the nature of the deposit as regards uniformity of value per ton and of the third dimension or thickness; (*b*) *probable ore* is ore which is similarly exposed on either two or three sides; whether two or three sides be taken as a basis will depend upon the character of the deposit; (*c*) *possible ore* is such ore as may exist below the lowest workings, or beyond the range of actual vision. (4) That members of the profession be urged to express in separate and distinct items the values assigned to the several classes of ore designated.

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Ore and the Rules of Ore Measurement.

Prof. Peele's report to the Mining and Metallurgical Society of America has also summed up a wide variety of definitions of "ore," and, after a study of the subject he has proposed the following: "*An ore is a mineral or mineral aggregate, containing precious or useful metals or metalloids, and which occurs in such quantity, grade and chemical combination as to make extraction commercially profitable.*" Concerning the measurment of ore reserves, the report concludes that it is not feasible to formulate any method that would be useful or of general application. Three points, however, are suggested, viz.: (1) Proper measurements of ore cannot be made without a clear knowledge of dip and strike, in case of a vein or bed; or of the shape of the deposit, in case of segregations, lenses or thick ore bodies in general. (2) Whenever applicable, the prismoidal formula should be used for calculating volumes. (3) Illogical precision in stating tonnages should be avoided. Even in the most completely blocked out ore, there are elements of uncertainty. It would appear that the sensible course is to use round figures to express measurements and tonnages of reserves. The society's committee on standardisation consists of C. R. Corning, Hennen Jennings, and Robert Peele. The other topics agreed upon for investigation, although no report has been made upon them, are: (1) The standard engineering ton; (2) the basis for the calculation of tonnage costs, and the relation between production of mine and actual tonnage treated in mill or smelter; (3) screen meshes; (4) the bases for the valuation of mines, and (5) the standardisation of accounts. Under the head of screen meshes, the committee has resolved to accept the work of the Institution of Mining and Metallurgy, London.

RAND ORE VALUES IN DEPTH.

A Consideration of a Subject of National Importance—Revival of the Deterioration Belief by Mr. H. H. Webb.

III.—THE ERRATIC DISTRIBUTION OF GOLD IN THE BANKET.

Despite the recent noteworthy strengthening of the ranks of the pessimists, we must confess that we cannot see that the theory of the "blotting pad" distribution of the gold in the Rand banket has been sensibly weakened by developments of the past few years. On the contrary, the exploitation of deep levels on a very large scale during the past half a decade seems to have strengthened the evidence in favour of the acceptance of this thesis which presumes that the auriferous content of the conglomerate may be resembled in its distribution to the sporadic blotches which figure on a piece of blotting paper if one shakes a full fountain pen over the blotting pad. The idea appears admirably to portray the irregularity of the rich and poor zones and the impossibility of applying any mathematical calculations as to the probable impoverishment or enrichment of certain zones. The blotches of ink may be taken to represent the high grade zones and the white of the blotting paper the low grade rock, and although the gradation between rich and poor zones is actually more pronounced than is depicted by the ink spots on the paper the theory appears to us to be far more acceptable when considered in the light of figures as to actual development than the thesis that the gold has an increasing paucity of concentration as greater depths are attained. Reverting to Mr. H. H. Webb's recent report, it may be emphasized that the consulting engineer of the Gold Fields remarked in his statement: "There can be no doubt that from our experience and in our mines the average value of the ore developed over large areas have been getting lower as greater depth is attained." The statement of Mr. Webb's applied to the mines of the group with which he is associated. He did not express the opinion that there was a general deterioration over the whole field as exploitation proceeded in depth. We do not know whether he is of opinion that there is general deterioration or not, but the fact remains he has not said so.

The Gold Fields Group and Other Mines.

The Consolidated Gold Fields of South Africa Company, it must be admitted, has not been particularly fortunate in its selection of properties on the Witwatersrand, and particularly of deep level properties. Years ago when the Main Reef series had been far less developed and exploited than it has been to-day, the selection of rich or poor deep level propositions was largely a matter of chance, and the Gold Fields people appear to have come into possession of large areas of blotting paper and comparatively little ink. In other words, the subsidiaries of the Consolidated Gold Fields —more particularly the deeper subsidiaries—are on the whole lower grade ventures than the mines adjacent to them. That as greater depths have been reached less rich ore has been found than in the zones nearer outcrop in the mines of this corporation has been stated by Mr. Webb, who, as technical head of the corporation, has exceptional opportunities of judging and his finding admits of course of no dispute whatever. But because this has been the experience in regard to the mines of the Consolidated Gold Fields, must it be taken to apply to the Rand as a whole? The student who would attempt to demarcate the rich or poor zones of the deeper Witwatersrand according to the richness or poorness (comparatively speaking) of the outcrop mines must soon realise that such a method is futile. For instance, assume A and B as being two adjacent outcrop mines, the value per ton of all the ore developed in A to date being 10 dwts. and of B 8 dwts. C and D are two adjacent deep level mines immediately below A and B, C being on the dip of A and D on the dip of B. Now, because A and B are both outcrop ventures and C and D are deep levels, it does not follow that the value per ton of all the ore in A and B is more than the value per ton of all the ore in C and D. Neither does it follow that because A is richer than B and C is on the dip of A and D on the dip of B that the deep level C will contain more gold per ton of ore taken out than D. Whilst the Rand over its whole length along the strike and distance on the dip is certainly the most uniform gold field that the world has known, there are remarkable fluctuations of value over small sections. There are in every mine ultra rich, rich, medium grade, poor and ultra poor stretches of banket, which are of irregular size and very varying extent, and the Rand as a whole may be considered as a multiplication of a typical average mine. There are in most localities rich and poor shoots, but the definition of these zones in terms of extent laterally or vertically is impossible until drives, winzes or raises have actually determined the extent.

Erratic Distribution.

The more one enquires into the distribution of gold on the Witwatersrand the more clear does it become that no hard and fast statements are warranted as to the relative gold contents of the banket, either laterally or vertically. We are here, however, concerned with the question of vertical distribution, that is to say, the comparative gold contents of the conglomerate beds in the outcrop zones, the first, second, third, and perhaps fourth row deep zones.

Richness in the Deeper Levels.

At the last annual meeting of the Chamber of Mines, the retiring President made some highly important references to this matter. He noted the numerous instances shown recently of very excellent reef values disclosed at the present deepest points of working in several mines all along the Rand. He gave the following instances. "The Geduld Proprietary Mines struck the reef but a few days ago at the deepest point of its workings—1,925 feet vertical from the surface—obtaining the value of 12·1 dwts. over a width of forty-eight inches. The New Modderfontein Gold Mine, in its circular shaft, has struck the reef at a depth of 2,158 feet, where it disclosed a value of 13·2 dwts. over 48·4 inches. At the Modderfontein Deep levels, in the incline shaft, which has reached a point equal to a vertical depth of 3,100 feet from the surface, a value of 10 dwts. over 46·8 inches has been obtained along a distance of 420 feet. At the Cinderella Consolidated, on its deepest, the fifth level, which runs at a vertical depth of 4,440 feet from the surface, 1,350 feet driven and sampled give an average value of 9·1 dwts. over 42 inches. At the City Deep, on its deepest, the tenth level, or at a vertical depth of 3,286 feet, the Main Reef Leader has given an average value of 14·7 dwts. over 28·9 inches. At the nineteenth level—the deepest—driven at a vertical depth of 4,190 feet, showed the Main Reef Leader to have a value of 10·4 dwts. over 36 inches. The Crown Mines, at its deepest working, the sixteenth level crosscut from No. 5 shaft, at a vertical depth of 2,660 feet, has exposed a large body of reef, being the Main Reef Leader and the Main Reef, of quite abnormal width and value—the Main Reef Leader alone has given 11 dwts. over 132 inches. Going further west, we come to the Consolidated Main Reef, which quite recently struck the reef in its No. 3 vertical shaft at a depth of 2,365 feet, at which point it assayed 17½ dwts. over 48 inches. In the Roodepoort district, I find at the Princess Estate that in the central section at the deepest working point, viz., 2,758 feet from the surface, the 1,690 feet driven on the 12th level have given an average assay value of 9·31 dwts. over the milling width of 26 inches." "You will agree," continued Mr. Elkan, "that these figures are, to say the least, encouraging, and for the benefit of people living at a distance, who are naturally less conversant with local conditions than we are, I wish to mention that the mines I cited are many, many miles apart, and are spread all over the Rand from east to west. Such values allow one to be optimistic as to the future of these gold fields, and allow one to look forward to a very large production of that much-sought-after metal—gold."

MORE RECENT EVIDENCE.

Mr. Elkan's remarks might be brought up to date by reference to the recent excellent disclosures in the Van Ryn Deep, in the deep level T piece of the Knights, or Witwatersrand Company, and in the Turf Mines section of the Village Deep. It may be argued that such testimony is not sufficiently comprehensive to prove that there is no material evidence to support the theory that there is depreciation of reef values as greater depths are reached. To this we would reply that the evidence adduced in the foregoing is at least as strong as that of the disciples of the impoverishment in depth creed. Always excepting the abnormally rich outcrop section of the Central Rand, where there appears to have been intense concentration of auriferous content for the first 300 or 400 feet from outcrop, we cannot see that any mining engineer or critic has made out a case for the belief that values per ton decrease in proportion to the depth of working, which is as strong as the evidence which has been led by responsible mining men to combat the thesis of pessimism.

THE CAMPAIGN AGAINST PNEUMONIA.

Investigations to be Extended—Expedition to the Interior—Interesting Report.

IN a report which has been addressed by Dr. Watkins Pitchford, Director of the S.A. Medical Research Institute, to the chairman and members of the Committee of that Institute on the subject of pneumonia among natives, the following, *inter alia*, appears:—" During the period which has intervened since the 13th of August last the Institute has issued 41,173 doses of prophylactic pneumococcal vaccine, 117 doses of therapeutic pneumococcal vaccine, and 27 complete sets of a graduated sensitised pneumococcal vaccine for the treatment of selected cases. The conclusion which we have formed regarding the efficacy of prophylactic inoculation are embodied in Dr. G. D. Maynard's memoir, which is now in the press. The figures dealt with in this memoir refer only to ' tropical natives,' and it is doubtful whether the same conclusions should be applied to natives from other districts. The Rand Mines, Ltd., have been good enough to supply the Institute with copies of their tabulated returns dealing with the incidence of pneumonia and other respiratory diseases among their inoculated and uninoculated labourers at my request. The statistician of the Institute has investigated these returns for the first two months, and his report is now laid before you. A copy of this report has, of course, been supplied to the Rand Mines, Ltd., and with their acquiescence it has been published in the *Medical Journal of South Africa* for November. As you are aware, the opinions of individual mine medical officers vary very widely as to the advantage of prophylactic inoculation. It has been proved to be of some value for ' tropical boys ' and with respect to others it may be said that we can for the present recommend no better procedure. In January of this year Sir W. Osler, Regius Professor of Medicine, at Oxford, addressed a letter of inquiry to Dr. C. Porter, Medical Officer of Health for Johannesburg, asking whether any investigation had been carried out as to the prevalence of the pneumococcus in the throats of native labourers on their arrival on the Rand. The reply was given that such an investigation would be undertaken by the Institute. It has been suggested by some authorities that the pneumonia which so seriously hampers the gold mining industry is contracted by the natives owing to their coming into contact with Europeans. These authorities hold that if such contact could be prevented pneumonia would be unknown among them. Preliminary investigations have shown us that a decided proportion of the natives newly arrived on the Rand bring the pneumococcus with them in their fauces. It has therefore become a matter of very great importance to discover at what point on their journey from their homes to the Rand this infection is contracted, or whether the infection is, as it were, indigenous to the people. As I have been informed that the tropical labour depots of the Witwatersrand Native Labour Association in Portuguese East Africa are being closed down at the end of this month, I have decided with the acquiescence of the committee to push this line of investigation without delay. Dr. D. J. Maynard and I have fully discussed the requisite details for such an inquiry, and he has volunteered to personally superintend the expedition. I propose to send Mr. F. H. Joseph, one of our senior bacteriological assistants, to accompany Dr. Maynard, and aid in the technical work. The programme and itinerary which I propose is in brief as follows: On arrival at Ressano-Garcia a bacteriological examination will be made of the gang of East Coast natives awaiting their departure for Johannesburg. Port Amelia will then be visited, and with the assistance of Dr. L. Bostock, the expedition will enter a purely native district, and carry out investigations as to the presence of the pneumococcus and the occurrence of loban pneumonia among the local tribes. The expedition will then proceed to Mozambique, and will examine the ' tropical boys ' which have been recruited for labour in San Thome just before their departure by ship. Our officers will then accompany these boys on the Portuguese mail boat as far as Beira. At this point Dr. Maynard may leave the boat and return via Salisbury and Bulawayo, for the purpose of investigating the circumstances of pneumonia and its effects at the Rhodesian mines. His bacteriological assistant will accompany the ' tropical boys ' to Lourenco Marques, and will repeat the bacteriological examination before he leaves the ship. In the carrying out of this scheme the Witwatersrand Native Labour Association has kindly afforded us its co-operation; in fact, without such co-operation the work could hardly have been undertaken. I have been in correspondence with Dr. Simon Flexner, the Director of the Rockefeller Institute for Medical Research, New York. The subject of our correspondence has been the proposal that Dr. Rufus Cole and some of his assistants should visit our Institute and conduct special researches into pneumonia. I am pleased to be able to report that Dr. Flexner and his Board think favourably of the proposal. It now only remains to fix a time to make definite arrangements for their work in some of our laboratories."

Swaziland Tin.

The following are the particulars in regard to operations for the month of November, 1913:—Concentrates recovered, 28·6 long tons; estimated profit (taking the price of tin at £168 per ton), £780; adjustments in respect of previous shipments to be added, £35; total profit for the month, £815.

New Kleinfontein.

With reference to the declaration by the directors of the New Kleinfontein of a 7½ per cent. interim dividend, the following information has been cabled to the London office of the company:—" At December 31, 1912, after providing for dividend, there was a debit balance of £201,399, excluding cash assets not immediately realisable, £52,939. At December 31, 1913, after providing for dividend now declared, it is estimated the debit balance will be £73,000, excluding cash assets not immediately realisable, £45,000."

SOME ATTRACTIVE RAND SHARES.

Stocks Which Appear to be Remarkably Cheap at Present Prices—Has Pessimism Gone Too Far?

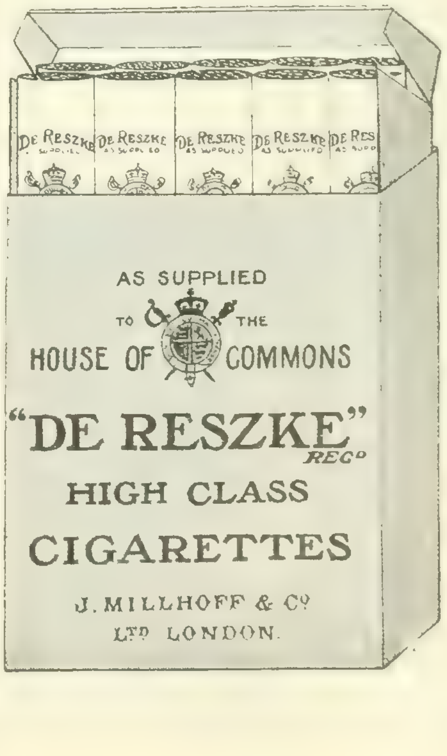
I.—RANDFONTEIN DEEPS AND CLOVERFIELDS.

At the time of extreme depression in the mining market, prevailing about six years ago, we took occasion to enquire whether in the instances of some stocks pessimism had not quite overstepped its bounds. In one or two cases it was shown that the market valuation as reflected in the price of the shares only represented the cash on hand and value of equipment, the claims thus being assessed at no value whatever. We contended that there was bound to be a reaction from such an anomalous state of affairs. In the more active and optimistic years of 1908 and 1909, the propositions in question showed very great appreciation, and it may be asked to-day whether the question asked in 1906 and 1907 is not worth reconsidering: has not the depreciation in regard to a number of stocks gone far beyond all reasonable limits, and are there not on the market to-day shares in Main Reef companies virtually begging for buyers at prices which are quite unrepresentative of the values of the properties cencerned? We most emphatically think that such is the case. For the time being South African mines are quite out of favour, and the Rand, in common with other mining areas of the sub-continent and Rhodesia, is not regarded as an attractive field for investment. At the same time it can safely be reckoned that a reaction will come. When it will come no one can say, for fashions in investment appear to be as fickle as fashions in dress, and just as difficult to anticipate. But that the time will come when the Main Reef series—the greatest gold field in the world—will again find favour in the eyes of the monied public is certain. Perhaps the time is not very far distant. The last year has witnessed most disappointing developments in regard to the gold industry. The benefits accruing from amalgamation of the various native labour recruiting agencies have been more, much more, than counterbalanced by the strike in July last, and the dire effects of that industrial upheaval on the native labour force. There are now signs of distinct improvement in this direction. Moreover, the dividend list for the year reflects inherent stability of the industry, and it is improbable that for the next two or three years at any rate, there will be any sensible diminution of yield or of profit from the mines. On the whole, the view that the Rand is appreciated at considerably below its true worth at the present time appears to have much to be said for it, and it is wholly reasonable to assume that the day will come, and in the not far distant future, when capital will again seek Rand investments. In a period of activity and reaction from the present moribund state of the Kaffir market all stocks would naturally show large advance, but the greatest appreciation will certainly be witnessed in concerns which are to-day in the doldrums, not because of any really unattractive prospects in regard to mining area but because capital is not forthcoming to make those prospects realisable. It is with this class of venture that we here propose to deal with.

Randfontein Deep Prospects and Possibilities.

The shares in the Randfontein Deep, for instance, appear to be most reasonably priced at about 3s., their present quotation. This is a rather remarkable proposition, inasmuch as it is a first row deep level mine, yet the reef has not been encountered therein in a shaft.

As is generally known, the dip of the Randfontein reefs is very steep, and hence the depth to the banket series is substantially greater than in the Central and Eastern sections of the Rand. In the first place it should be appreciated that the Randfontein Deep property, in addition to the Randfontein reefs, carries the Horsham and Lindum reefs, separated from each other by a parting of about 120 feet of quartzite. These two reefs outcrop at a distance of some 5,000 feet to the east of the outcrop of the Randfontein Leader and some 2,500 feet east of the average western boundary. It was reported in February, 1907, that 1,386 feet sampled on the Horsham Reef showed an average value of 5·69 dwts. over a stoping width of 36 inches. As to the Randfontein, or Main Reef series, it is interesting to learn that this was cut at a vertical depth of 2,730 feet, and at a distance of 430 feet west of the Randfontein Deep western boundary that is to say in the property of one of the outcrop companies of the Randfontein Estates. It was estimated that this reef lay at a vertical depth of about 2,900 feet in the Randfontein Deep property. The average assay value there struck was quite satisfactory, showing 9·73 dwts. over a width of 57 inches. Two shafts were started up in December, 1909, with the Randfontein series as their objective of attack. These are 3,625 feet apart and 200 feet east of the western boundary of the property. The north shaft is 3,900 feet from the northern boundary, and the south shaft 3,800 feet from the southern boundary. In this latter shaft operations were suspended in March, 1911, when a depth of 1,650 feet had been reached. As to the operations of last year, Professor J. G. Lawn, the consulting engineer, in his report, writes: "For the month of January the north shaft was sunk 56 feet, at a total cost of £80 17s. 6d. per foot. The water pumped and baled amounted to 21,732,000 gallons. As there was no evidence that we were getting through the fissured ground mentioned in my last annual report, and as the water was constantly following the shaft down as it was being sunk, making the sinking slow and consequently expensive, it began to be doubtful whether the money in hand would suffice to enable the shaft to be sunk to the Randfontein Leader. The directors therefore thought it wise to conserve such funds as remained, and sinking was stopped on the 8th February, when the shaft had attained a depth of 2,083 feet. A 4in. pipe, extending from the collar of the shaft to the bottom, was installed for the purpose of enabling a borehole to be put down, should it be found desirable to do so at a future date. Developments in the neighbourhood of the property have tended to confirm the opinion that this will some day be a successful mine. The West Rand Consolidated has recently located Battery Reef of good value at the southern part of their property, that is near the northern boundary of the Randfontein Deep, and it is understood that the developments in the bottom levels of the southern section of the Randfontein Central mine have been highly satisfactory. It should also be borne in mind that there is a long line of Battery Reef outcropping in your property, and, with the Randfontein Leader at depth, there is no doubt that the Randfontein Deep is a mine with great potentialities." Having regard to the large claim area of the property, and its favourable situation, it is clear that the Randfontein Deep is a mine of great possibilities. Despite the fact, however, that it is a first row deep, it is a mine that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would take some years to bring to the producing stage even with a very active development policy in operation. In the years to come the Randfontein Deep will, no doubt, take a prominent place in the list of the Rand's producing mines.

There are in issue 667,889 fully paid shares, each of £1 nominal value, and at their present price this gives the proposition a market valuation of approximately £110,000. At the end of last year there was more than half this sum—to be precise, £56,723—held as available cash. After making allowance for administrative expenses during the current year, it would appear that when the cash on hand at the present moment is deducted the valuation for the property alone is only about £60,000. There are 1,255 claims, so that on this basis of calculation the value placed by the market on these claims situated on the dip of the great Randfontein Central property works out at £50 per claim. The authorised capital of the company is £950,000, and of the registered capital 35,331 shares are held in reserve. At the last annual meeting Mr. Munro, who presided, remarked: "The cash at the close of the year, amounting to £56,723 6s. 6d., is sufficient to meet the expenses on upkeep of the property for a considerable time, and it is hoped that long before this money is exhausted conditions will be favourable for raising fresh capital to place your undoubtedly valuable property on a working basis." This indeed appears to be an attractive share at present prices.

CLOVERFIELDS.

Another stock which appears to us to warrant attention at the present price is Cloverfield. The property is situated to the north of the Geduld Proprietary, is adjoined on the west by the Modderfontein B., on the east by Welgedacht, and the north by the Rand Klip. A scheme of amalgamation in which the Cloverfield, Welgedacht and Geygerle Companies will participate, has been mooted, but whether Cloverfield becomes active again as an independent company or as one unit of the projected fusion, the shares at their present price of about 4s. 6d. seem to hold out distinct chances of going considerably better. The capital of the concern is £385,000 and 30,000 shares are held in reserve. At the end of 1912 the loan had been increased to £46,280 0s. 11d., which included interest to 31st December, 1912. As security for this loan, the lenders as stated in previous annual reports, hold an irrevocable power of attorney to pass a bond over the company's property.

The property consists of 799 claims, comprising the whole of the Cloverfield block, adjoining the farms Geduld and Welgedacht, Far Eastern Rand. In January, 1903, No. 1, or the western of the two boreholes on the Cloverfield area, intersected the pay portion of the Van Ryn Reef at 1,979 feet depth from surface, showing 17½ inches thickness, of which top 9 inches indicated 10 dwt. and lower 8½ inches 54 dwt., equal to about 16¼ dwt. average over a stoping thickness of 3 feet. The Modderfontein reef formation, thick in aggregate, but unpayable, was passed through nearer to surface. The situation of the bore is due north of No. 3 bore on the Geduld. Bore No. 2 (eastern) in April, 1903, cut the reef series from 2,975 feet to 2,998 feet, varying from 1½ inches to 8½ inches in width; assays few grains, except footwall leader, of which 6 inches core was lost; remaining 4 inches reef assay 1 oz. 8 grs. per ton; footwall shales at 3,008 feet. Calculated from information obtained from the boreholes, as well as those put down on the neighbouring farms, the dip of the reef varies from 12 to 20 degrees. In the centre of the property the reef is probably flatter than is shown by the above dips. The area at the western boundary, parallel to the line of strike, is 5,000 feet wide, the greatest width being 5,200 feet. It is proposed to work the property with one five-compartment shaft, located 1,000 feet east of the west boundary and 1,500 feet north of the south boundary. The shaft (7 feet by 18 feet) intersected the reef on June 15, 1909, at 2,043 feet. Sixteen sections of reef matter all round the shaft indicated by sampling 22·3 dwt. over a width of 10½ inches. The average value of the 5,400 feet of reef sampled during the year 1910 was 16·6 dwt. over a reef width of 11½ inches, and the consulting engineer pointed out that this result in itself could not be considered very satisfactory; but the details of the work indicate the existence of areas of good value. He added that the average of a total of 2,705 feet of reef exposed from the 1st level drives was 11·7 dwt. over 14·4 inches, whilst the average for the 1,330 feet sampled in the 2nd level drives was 16·7 dwt. over 12·5 inches, which was a decided improvement; and both the north and south faces of this level were stoped in good ore. The consulting engineer's opinion is that the area explored is too small a percentage of the total area of the property to afford definite information for gauging its possibilities.

This, too, appears to us to be an attractive share at the present price.

BREYTEN COLLIERIES.

THE fourth ordinary general meeting of shareholders in the Breyten Collieries, Ltd., took place in the board-room, Consolidated Gold Fields Buildings, last week. There were present Messrs. D. Christopherson (in the chair), F. Leslie Brown, J. E. Kent, W. S. Smits, R. O. Stone, P. S. Wimble, E. Mansfield, F. H. Tarlton, C. E. Nixon, J. E. Orr, F. M. Cowan, and J. D. Low, secretary; the total share representation being 53,849 out of an issued capital of 90,000 shares. After the formal business the report of the directors for the year ended the 31st of October was submitted, together with the accounts for the same period. This showed that the capital of the company remained unchanged, consisting of £100,000 in 100,000 shares of £1 each, of which 90,000 shares were issued fully paid and 10,000 were held in reserve. In moving the adoption of the report and accounts, the Chairman said: The financial position of the company is so fully set forth in the published report and accounts now before you that I do not think further comments are necessary from me. During the year under review the operations of the company have resulted in a profit, after allowing for interest on overdraft, sundry amounts written off, profits tax and due allowances for rails, sleepers and trucks, etc., at the mine, of £27,468. Of this amount £20,000 had been appropriated for capital expenditure incurred during the year, chiefly in connection with the enlargement of the plant capacity, leaving at the end of the year £7,500 to the credit of appropriation account. At our last general meeting we informed you that it was proposed to increase the capacity of the plant to be in a position to deal with an output of 55,000 tons per month. On further consideration, your board decided for the time being to bring the capacity up to a maximum of 45,000 tons per month, in such a way that the enlargement up to a capacity of 55,000 tons per month, or even more, could be accomplished with a minimum of expenditure. As regards the mine itself, you will see from Mr. Leslie's report that the coal won continues to be of good quality and the seam thickness of coal has been maintained in each section of the workings, and further, I may state that the simplicity with which this mine continues to be worked confirms up to date the confidence with which we have always regarded the future of your collieries. Before leaving dealing with the mine, I would like to point out that a start has been made to open out from No. 5 adit, which commands a large area, and thus provide further working faces as required. In continuance of the policy outlined at the last general meeting, namely, that the capital expenditure required for the extension of the plant should be spread over a period and a portion of the profits devoted to the payment of dividends, the directors have declared a dividend of 10 per cent., payable on the 29th of January to shareholders registered on the 31st of December, which will leave the company at that date with liabilities amounting to approximately £11,000 to be met out of future profits. I may inform shareholders that during the last few months the output and profit from operations have shown considerably improved results, the profit for October and November being about £3,370 and £3,000 respectively. In the interests of your company, your directors thought it advisable to open an agency in London, particulars of which you will find in the directors' report before you. Before concluding, I would like to refer to the excellent services rendered to the company by Mr. Lewis and his staff on the mine. It is without doubt largely due to his and their energy that the company has obtained the satisfactory results now shown, and our best thanks are due to them. Also I would like to add our appreciation of the services of Mr. Rossiter, our business manager, whose close attention to the company's business has materially assisted to the achievement of the results obtained. I now beg formally to move the adoption of the report and accounts. The report and accounts were duly adopted. In answer to a question as to whether very great capital expenditure was anticipated for the current year, the Chairman said that such was not anticipated as far as they knew as yet. All they knew of at present was in regard to the necessary erection of a school recreation hall and in connection with the No. 5 adit already referred to. Speaking roughly, he did not expect this expenditure would exceed £2,000. The reappointment to the board of Messrs. F. D. P. Chaplin, M.L.A., and J. E. Orr, who retired by rotation, was agreed to, and the meeting terminated.

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ANOTHER AMALGAMATION SCHEME.

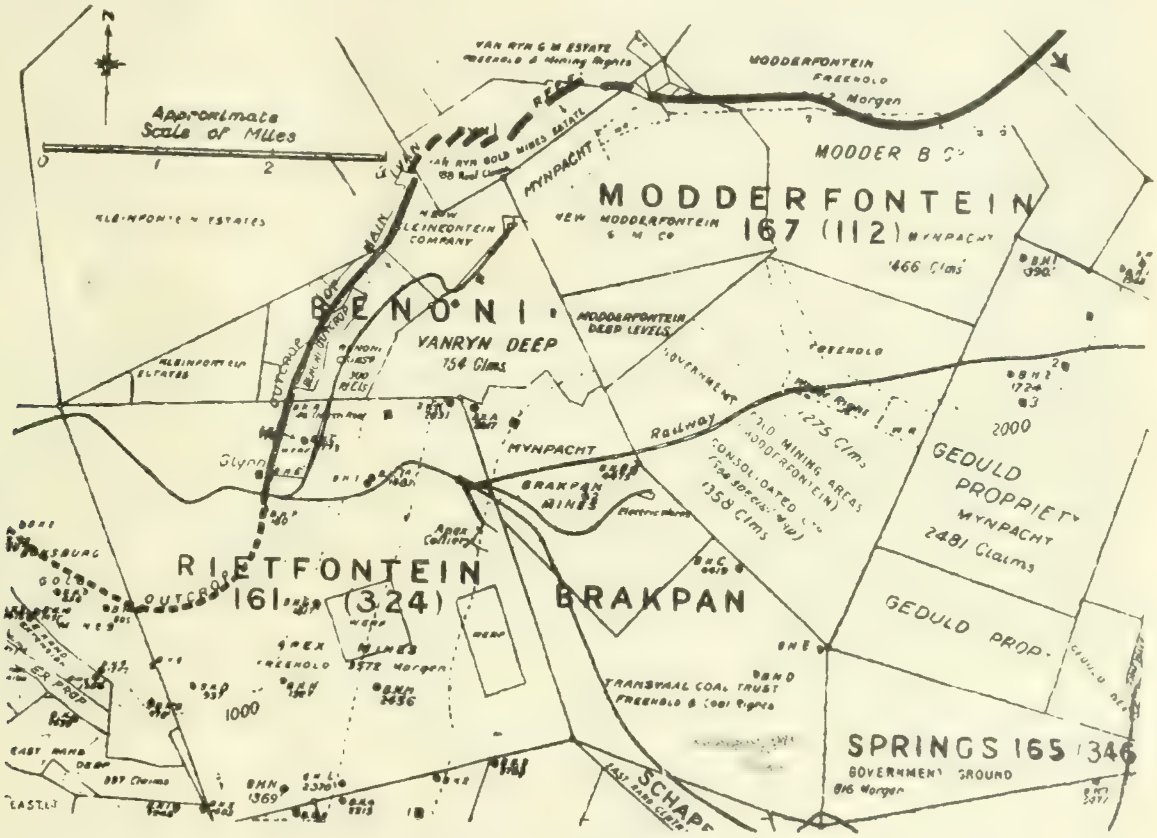
Consolidation of the New Kleinfontein, Apex and Benoni Mines—A New Factor in Further East Rand Mining—Outstanding Features of the Project.

Close on the heels of the Crown Mines—Robinson amalgamation comes the announcement of the formulation of a scheme for the consolidation of the New Kleinfontein—Apex and Benoni Mines, to which a reference was made in our columns last week. The scheme of amalgamating these three important Further East Rand ventures has had the close attention of the boards of directors for months past, and it is common knowledge that many difficulties have had to be met and that the negotiations have been protracted and tedious. However, some basis of adjustment has now apparently been arrived at. The Kleinfontein consolidation scheme will, if given effect to, quite revive the fortunes of the fine old Anglo-French Company's mine and will bring into the productive arena two Witwatersrand mines that have hitherto had chequered careers, but which nevertheless are possessed of very considerable possibilities. The following cable, which has been despatched to the London office of the New Kleinfontein Company for publication, sets forth the essential details of the scheme:—" Negotiations have been completed and a provisional agreement entered into by the board of directors of the New Kleinfontein Company, Ltd., Apex Mines, Ltd., and Benoni Consolidated Gold Mines, Ltd., for the purchase of the property and assets and the taking over of the liabilities and obligations of the Benoni Consolidated Gold Mines, Ltd., and gold section of Apex Mines, Ltd., by the New Kleinfontein Company, Ltd., the Apex Mines, Ltd., retaining the freehold of the farm, colliery, plantations, quarry, etc. The scheme involves the payment to the Benoni Consolidated Gold Mines, Ltd., of 31,540 shares in the New Kleinfontein Company, Ltd., and the taking over of the debts of approximately £219,000, of which £175,000 are deferred for payment, redemption commencing after 10 years, and then extending over five years; and to the Apex Mines, Ltd., of 150,000 shares in the New Kleinfontein Company, Ltd. Notices of general meetings, to be convened towards the end of March, in order to consider proposals, will be advertised and posted to all shareholders early in January, when a circular giving full details of the scheme, accompanied by the reports of the engineer and plan of the properties to be amalgamated, will be posted to shareholders."

Capitals and claim areas of the companies concerned in the scheme are as under:—

	Capital.	Claims
New Kleinfontein ..	£970,000	334
Benoni	394,249	355
Apex	300,000	1,115*

* Equivalent in mynpacht and other claims.



Map of the Further East Rand, showing Relative Positions of the New Kleinfontein, Apex, and Benoni Properties.

The New Kleinfontein is equipped with 220 stamps and four tube mills, and the Benoni Company possesses 55 stamps and four tube mills of 20,000 tons per month capacity/ It may be recalled that in his report on the Apex-Benoni fusion project, Mr. C. D. Leslie based calculations on the estimated existence (in the two areas) of 18,000,000 milling tons of probable value of 5½ dwts., say 23s. 6d. per ton. If from 1,115 claims a deduction of 20 per cent. for faulted ground is allowed, there would be 892 claims, and 18,000,000 tons for such net area makes about 20,000 mill tons per claim expected. We herewith reproduce a map showing the relative situations and sizes of the mines concerned in this, the Rand's latest consolidation project.

Vrede Hoek Tin.

At Capetown work has again been resumed on the property of the Vrede Hoek Tin Mining Company on the slopes of Table Mountain; the present demand for men is, however, limited to coloured labourers for hammer and drill work.

AIR CONSUMPTION AND MAINTENANCE COSTS OF ROCK DRILLS

Discussion on Recent Paper.

[By Kenneth Austin.]*

The paper which has been presented to the S.A. Institute of Engineers by Messrs. E. G. Izod and E. J. Laschinger directs attention once more as to what can be done to reduce the high underground working costs which are too commonly current in the Transvaal. Surface costs have been shaved down so that there is very little to attack—but if we compare the cost of moving, say, 100 tons of rock on the surface, with the cost of moving the same weight from the mine, it will be seen that there is plenty of room for economy. It can readily be seen that if one mine uses compressed air at a cost of only 4s. per drill shift, while another almost next door costs 8s. 6d. (and in some mines *over* 8s. 6d. per drill shift), then as there are 5,159 reciprocating rock drills in use in the Transvaal, the relative costs would be £1,031 16s. per day with the economical conditions, and £2,063 12s. for the uneconomical conditions, a possible saving of over £1,000 per day for compressed air alone! The investigations made by the authors of this paper are of such a startling nature that it will be surprising if those who have been the means of bringing about such results as reported, do not reap a very big reward from a sincere, thankful, and grateful industry. I use the word "industry," because the whole of the mines will benefit from what Mr. W. Calder has done. The paper under review is so complete and convincing that the authors must not be disappointed if there is but little discussion. This subject has been before the members already (Vol. II., No. 10), and one extract from the paper, which was published in 1904, is so applicable to the present that it is worth repeating. The City and Suburban mine engineer, in 1904, Mr. Docharty related that he was frequently told by men who applied for work: "I am not a fitter exactly, but I can do rock drill work." The common idea being that any old thing is good enough for drills. Now this is the idea that Mr. W. Calder has combatted for years; he has succeeded, and as shown by the authors of this paper, has saved the Rand Mines group £105,000 per annum. What about the other groups? In 1904 rock drill cylinders were usually allowed to work with a clearance of 1/64th of an inch; this has been reduced by skill to a clearance of only 2/1000ths of an inch, which has resulted, as shown in Table VI., of a saving in air consumption alone of an enormous amount. It has been proved by the figures presented by the authors of this paper that the system of re-building every machine every time that it comes up for repair is the only one to obtain and maintain economy. I can speak from practical experience in mining work, that it is the silliest, most idiotic economy to "starve the machines and keep them in a dilapidated condition." There should never be a rock drill underground which was not as complete and as well finished as a gun, a rifle, or any first-class motor car mechanism. It used to be a practice with one mine captain under whom I had to work as a shift boss at one time, to charge a fine of 10s. against the miner for every time a rock drill was sent up to the surface for repair. This idea may still be current, but I say it deliberately that this sort of thing is the cause of high working costs underground. My opinion is well known that the work done underground should be controlled by mechanically trained men, and it may be futile to repeat it—very few mechanical men can approach management, excepting through a long period of extra drudgery in the survey department, with the result that notwithstanding the inevitable disabilities which accompany all underground work, high working costs prevail. No mechanical engineers have any directing powers underground, and none are on the boards of public mining companies. I have personally examined the Calder system at the Village Main Reef mine, and it is the most perfect one for the purpose. I have heard some say: "There is nothing in it," but as a matter of fact there is £105,000 per annum in it.

At the present time when native labour is really scarce, more machinery will have to be used, and the day is not far distant when those old-fashioned persons, who are still powerful, will be compelled to admit that the rock drill is mightier than the 4lb. hammer, and 42in. rock drills. Here in this paper we have it proved that systematic organisation will have saved the Rand Mines alone a sum of over two millions of money, if the annual saving be multiplied by 20 years' life only. The whole of the mining organisation underground should be thoroughly overhauled, and no matter what the cost of re-organisation may be it will be of the greatest benefit to the shareholders, if anything like the results are obtained as stated in this paper. One of the firms with which I have had the pleasure of being associated has every head of each department, on each day at 10 o'clock punctually, to meet in committee, and the managers meet the directors twice each month. As the directors fall out—and none of them cling to office, because they know by experience that their capital is well guarded—then the vacancies are filled up by managers chosen from the various departments. The whole idea of master and servant is gradually being obliterated in this concern; this permeates the whole of the works. Healthy co-operation produces the happiest and most profitable results, and nothing is heard of the pernicious doctrines of the theoretical gentlemen whose sole idea of progress is to pull everything down and destroy it. It is difficult to suggest any such scheme on the Witwatersrand because many will think "what job is he after?" but I take this opportunity of pointing out that the paper of Messrs. Izod and Laschinger would never have been possible without co-operation. It is easy to deal with little trickles of waste in mining, but it would be little less than criminal to neglect the enormous possibility of making a loss into a profit, as so ably shown in this paper. It is clear to everyone that Mr. Calder could not take any patent out for his system, but it would be quite within the province of equity (using the term in its strict application in jurisprudence) to hold out as a reward to any person or persons who are able to bring about these economies, the value of the net saving for one year (taking the highest amount saved per annum). If such a reward were held out we should soon have to rejoice about low working costs, as we now have to deplore high working costs. I know that I shall be told that the mines employ the best "experts" for this kind of work. Basic principles have to be established with regard to underground work—the chief of which is that the work must be made attractive and that there is a regular scheme for promotion—and that after this, the capital invested in mines shall be protected from the designs of the schemer. As present it is a case of grinding everyone under the system which is called "speeding up," and, as far as capital is concerned, "the devil take the hindmost." All this results in modified anarchy. Any honest man who works underground will tell you this—and any honest investor will tell you the same thing. The whole of our organisation in this country is like a billiard ball with flat spots all over it—it rolls badly, and then it stops—but occasionally when we have a fearless paper like that one published by Messrs. Izod and Laschinger, we really see where we are. If we could by any chance drop the placid, conventional attitude in dealing with such questions which arise from the study of such a valuable paper as the present one, we should be compelled to admit that it pays handsomely to offer the highest inducements for the attainment of true economy, which does not mean parsimonious pouncing on petty problems.

Read before the South African Institute of Engineers.

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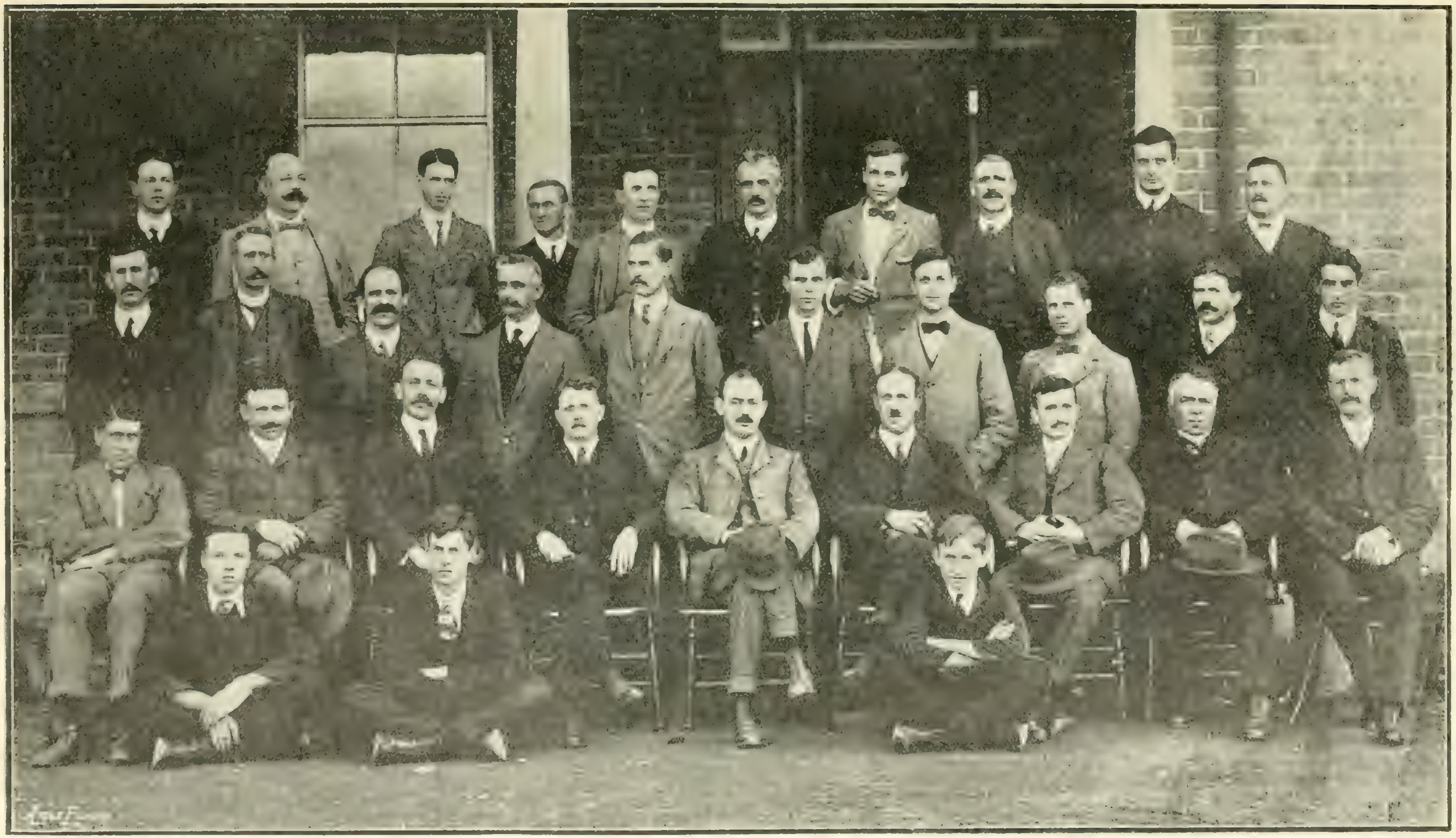

Sitting on ground.—L. J. Barber (office boy), H. A. Pike (office boy), W. Wraith (office boy).
Row 2 (sitting).—R. S. Tempest (Surveyor), J. P. Greene (Compound Manager), E. M. Weston (Mine Foreman), W. M. L. Cuthbert (Mine Secretary), F. Graham Bell (Manager), T. L. Hodgson (Resident Engineer), E. H. Christopherson (Mine Foreman), E. Roberts (Mine Foreman), W. Lawrie (Foreman Carpenter).
Row 3 (standing).—J. Stewart (Foreman Blacksmith), H. Russell French (Assistant Compound Manager), R. McAdie (Shift Boss), A. Walden Smith (Storekeeper), E. J. Phillips (Shift Boss), L. H. Cooke (Assistant Storekeeper), H. Harrison (Clerk), L. A. Kay (Assistant Timekeeper), W. M. van Breda (Native Timekeeper), F. W. Pike (Hospital Night Attendant).
Row 4 (standing, back row).—W. L. van Rye (Mine Foreman's Clerk), H. C. Beswick (Shift Boss), J. M. Goddard (Sampler), E. J. White (Assayer), H. W. Innes (Assistant Native Timekeeper), A. Nottman (Foreman Fitter), P. A. Wilkinson (Assistant Surveyor), A. Robinson (Assistant Foreman Fitter), A. A. Maclean (Stores Issuer), W. B. Pike (Native Hospital Attendant).

R. Oliver, Photo, 38 Pritchard Street.

THE YEAR'S DIVIDENDS.

Declarations for Transvaal Gold Mines Received up to the Time of Going to Press.

Hereunder we give a table setting forth the dividends declared by Transvaal gold mining companies for the current year. In regard to declarations for the last six months of 1913 there are stated the returns available up to the time of going to press.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount.	Total Distribution for Year.	Amount Half Year, June, 1912.	Amount Half Year, Dec., 1912.
THE RAND.								
Central Mining and Investment Corporation.								
Bantjes Consolidated ...	£502,306	June	5	1s.	£25,115	£37,672	£25,115	£31,369
	502,306	Dec.	2½	6d.	12,557			
City Deep	1,250,000	June	10	2s.	125,000	218,750	—	156,250
	1,250,000	Dec.	7½	1s. 6d.	93,750			
Crown Mines	940,106	June	55	5s. 6d.A	517,058	1,034,116	517,058	517,058
	940,106	Dec.	55	5s. 6d.	517,058			
Durban Roodepoort Deep..	440,000	June	5	1s.	22,000	22,000	22,000	22,000
Ferreira Deep	980,000	March	25	5s.	245,000	490,000	182,000	220,500
	980,000	Sept.	25	5s.	245,000			
Geldenhuis Deep	585,753	June	10	2s.	58,575	102,507	58.575	29,287
	585,753	Dec.	7½	1s. 6d.	43,932			
New Modder	1,400,000	June	15	12s.B	210,000	420,000	175,000	210,000
	1,400,000	Dec.	15	12s.	210,000			
Nourse Mines	827,821	Jan.	10	2s.	82,782	234,549	82,782	41,391
	827,821	June	10	2s.C	68,985			
	827,821	Dec.	10	2s.	82,782			
Modderfontein B.	700,000	June	20	4s.	140,000	315,000	—	140,000
	700,000	Dec.	25	5s.	175,000			
Robinson	2,750,000	June	8	8s.D	220,000	412,500	343,750	275,000
	2,750,000	Dec.	7	7s.	192,500			
Rose Deep	700,000	June	25	5s.	175,000	297,500	157,500	157,500
	700,000	Dec.	17½	3s. 6d.	122,500			
Village Main Reef	472,000	June	35	7s.	165,200	330,400	165,200	165,200
	472,000	Dec.	35	7s.	165,200			
Village Deep	1,060,671	June	10	2s.	106,067	159,100	79,550	106,067
	1,060,671	Dec.	5	1s.	53,033			
Companies with Head Offices in Natal, managed by the Central Mining and Investment Corporation.								
City and Suburban	1,360,000	June	7½	6s.B	102,000	204,000	102,000	102,000
	1,360,000	Dec.	7½	6s.	102,000			
New Heriot	115,000	May	35	7s.	40,250	80,500	46,000	46,000
	115,000	Nov.	35	7s.	40,250			
Consolidated Gold Fields of South Africa.								
Knights Deep	643,526	June	12½	2s. 6d.	80,441	117,617	80.441	64,352
	743,526	Dec.	5	1s.	37,176			
Simmer and Jack	3,000,000	June	7½	1s. 6d.	225,000	412,500	225,000	.25,000
	3,000,000	Dec.	6¼	1s. 3d.	187,500			
Robinson Deep	1,000,000	June	12½	2s. 6d.	125,000	275,000	150,000	125,000
	1,000,000	June	2½	6d.E	25,000E			
	1,000,000	Dec.	12½	2s. 6d.	125,000			
East Rand Proprietary ...	2,445,897	Aug.	12½	2s. 6d.	305,736	611,472	305,736	305,736
	2,445,897	Dec.	12½	2s. 6d.	305,736			
Consolidated Mines Selection.								
Brakpan Mines	750,000	June	20	4s.	150,000	243,750	112,500	187,500
	750,000	Dec.	12½	2s. 6d.	93,750			
Johannesburg Consolidated Investment Company.								
Ginsberg	210,000	June	17½	3s. 6d.	36,750	73,500	31,500	36,750
	210,000	Dec.	17½	3s. 6d.	36,750			
New Primrose	325,000	June	30	6s.	97,500	195,000	81,250	97,500
	325,000	Dec.	30	6s.	97,500			
New Unified	250,000	June	10	2s.	25,000	50,000	25,000	25,000
	250,000	Dec.	10	2s.	25,000			
Witwatersrand	469,625	June	25	5s.	117,406	234,812	74,375	74,375
	469,625	Dec.	10	5s.	117,406			
Consolidated Langlaagte ...	950,000	Dec.	10	2s.	95,000	95,000	—	—
Glencairn	55,000	Dec.	5	1s.	27,500	27,500	—	27,500
Van Ryn Deep	1,196,892	Dec.	7½	1s. 6d.	89,767	89,767	—	—
New Rietfontein Estate ...	610,084	Dec.	2½	6d.	15,252	15,252	—	45,756

A Per 10s. share. B Per £4 share. C For five months ending June. D Per £5 share.
E Bonus. F Including £20,000 bonus.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount.	Total Distribution for Half Year.	Amount Half Year. June, 1912.	Amount Half Year Dec., 1912.
GENERAL MINING AND FINANCE CORPORATION.								
Meyer and Charlton .	200,000	June	30	6s.	60,000	140,000	50,000	F70,000
	200,000	Dec.	30	6s.	60,000			
	200,000	Dec.	10	2s.	20,000			
Van Ryn	500,000	June	25	5s.	125,000	237,500	112,500	112,500
	500,000	Dec.	22½	4s. 6d.	112,500			
ANGLO-FRENCH EXPLORATION.								
New Kleinfontein . . .	970,000	Dec.	7½	1s. 6d.	72,750	72,750	–	48,500
S. NEUMANN AND COMPANY.								
Consolidated Main Reef ...	924,364	June	5	1s.	46,218	92,436	46,218	46,218
	924,364	Dec.	5	1s.	46,218			
Wit. Deep	550,000	June	15	3s.	82,500	192,500	68,750	68,750
	550,000	Dec.	20	4s.	110,000			
Wolhuter	860,000	April	6¼	1s. 3d.	53,750	86,250	75,250	75,250
	860,000	Nov.	3¾	9d.	32,500			
ROBINSON GROUP.								
Randfontein Central . .	4,193,700	June	7½	1s. 6d.	314,527	314,527	—	209,685
Langlaagte Estate	886,500	June	7½	1s. 6d.	66,487	66,487	43,475	86,950
A. GOERZ AND COMPANY.								
May Consolidated	288,750	June	5	1s.	14,438	14,438	13,312	28,875
INDEPENDENT COMPANIES.								
Durban Roodepoort	125,000	June	10	2s.	12,500	31,250	12,500	18,750
	125,000	Nov.	15	3s.	18,750			
Jumpers	100,000	April	5	1s.	5,000	5,000	5,000	5,000
OUTSIDE DISTRICTS.								
NIGEL DISTRICT.								
Nigel	223,106	June	5	1s.	11,155	11,155	11,155	11,155
Sub Nigel	431,580	June	2½	6d.	10,789	21,579	– –	21,579
	431,580	Dec.	2½	6d.	10,789			
BARBERTON DISTRICT.								
Sheba	269,738	Feb.	5	1s.	13,487	47,204	13,487	26,973
	269,738	June	7½	1s. 6d.	20,231			
	269,738	Oct.	5	1s.	13,487			
LYDENBURG DISTRICT.								
Ceylon Lydenburg	22,600	June	22½	4s. 6d.	5,085	5,085	– –	6,215
Glynn's Lydenburg	170,000	Jan.	10	2s.	17,000	17,000	17,000	25,500
Transvaal G.M. Estates...	604,225	Mar.	20	4s.	120,845	241,690	75,528	105,739
	604,225	Sept.	20	4s.	120,845			

CORRESPONDENCE AND DISCUSSION.

Third Annual Mining Exhibition.

To the Editor, *South African Mining Journal.*

Sir,—With reference to my previous circular, dated 2nd October last, I am now in a position to advise you that the third annual mining exhibition under the auspices of the Chemical, Metallurgical and Mining Society of South Africa, will be held (by kind permission of the authorities), in the Volunteer Drill Hall, Twist Street, Johannesburg. The exhibition will open on Tuesday, the 19th May, and will close on Friday, the 29th May. As before stated, the scope of the exhibition will be on much the same lines as in previous years, *i.e.*, chemical, metallurgical and mining apparatus and device for laboratories, works and mines; models, working or otherwise, of apparatus for similar purposes; plans; diagrams, etc., of mines, works, plants, machinery and apparatus; safety and rescue and other ambulance apparatus and appliances; and specimens of crude and manufactured mineral or other natural products of South Africa. The Exhibition is primarily for the benefit and information of those engaged and interested in mining work, and to give those in search of mineral products an opportunity of ascertaining where these products may be obtained. No charge will be made for the exhibition of natural products by farmers or *bona fide* prospectors, or for models or apparatus exhibited by mine employees or small inventors. Commercial firms, for whom a limited space will be provided, desirous of exhibiting machinery, apparatus, natural products, etc., will be charged for the space occupied at from 5s. to 10s. per square foot, according to position, and whether stands are provided or not. Those desirous of engaging space provisionally are requested to specify their requirements with the least possible delay to the undersigned. The usual arrangements for exhibitions with regard to Customs duties and railway rates, will be made.—Yours, etc.,

FRED ROWLAND,
Secretary.

18th December, 1913.

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THE GEOLOGY OF THE PONGOLA GOLD FIELDS.

Description of the Gold-Bearing Ore Occurrences of the District.

[By Dr. E. T. MELLOR.]

THE precious metal has been found in many parts of the area and both in rocks belonging to the Upper and Lower Pongola series. It occurs both in quartz veins and in conglomerates. Of the former, the most extensively worked are those at Wonder Mine, Wonderfontein No. 486 (Vryheid), Klipval Pongola Mine, Klipval No. 33 (Piet Retief) and Vergelegen Mine. The Wonder Mine has been fully described by Dr Hatch.[†] It was shut down at the time of the visit of the writer. The gold is found in quartz reefs striking a few degrees west of north and coinciding with the strike of the country rock, which consists of the quartzites and shales of the Upper Pongola Series. Two reefs have been opened up, but prospecting work has been done on several. This mine was considered by Dr. Hatch to show considerable promise. It produced 4,084 ozs. of fine gold from June, 1910, to September, 1912, when it was closed down.[‡] Quartz reefs are very plentiful on this farm and a good deal of prospecting has been done. The usual strike of the reefs is in a direction roughly parallel to that as shown in the Wonder Mine, but there is also a series of reefs with a strike towards north-east magnetic. Reefs striking in this direction are also found on the farm Breda No. 261.

The Klipval Pongola Mine lies on the farm Klipval No. 33, on the north side of the Pongola. There are two reefs worked, called locally the "main reef" and "quartz reef." These reefs run along parallel lines and are separated from each other by a distance of some 20 feet. They dip in a direction almost due east (magnetic) at an angle of 50 degrees to 55 degrees. The strike is nearly due north and south, according to the configuration of the ground, the outcrop running straight over the crest of a steep hill. The main reef consists of an impregnated zone of schistose ferruginous character, through which quartz stringers form a fine network of veins. The reef is very poorly defined both on the hanging and foot walls, graduating on both sides into a rock similar to the reef, but without quartz stringers. The country rock on the Klipval property consists of a red ferruginous shale The reef does not run exactly parallel to the formation, consequently on the north slope of the hill the outcrop of the reef crosses the line of outcrop of a band of quartzite. This has had no apparent influence upon the character of the reef. The reef proper varies in width from 1 foot to 5 feet. Associated with the reef is what is called locally a quartzite bar, which carries gold intermittently. This rock is of peculiar appearance, exceedingly fine grained, and white to cream in colour, soft and friable in texture, powdering something like fine salt. A rock of identical character is found along the chert horizons of the dolomite and also among the banded ironstones at the top of the latter. It is here the result of weathering processes of a peculiar kind, and which have transformed thick horizons of chert and bands of jasperoid rock into an easily scratched, somewhat sandy, fine-grained rock. The rock does not by any means always weather like this, but the writer has observed many instances of unaltered chert and jasper passing into this rock over limited areas. Many instances can be seen in the lead and zinc workings of the Zeerust district. This "quartzite" bar is then most probably an altered quartz reef, and probably represents a comparatively early deposition along the walls of the fissure which subsequent solutions have modified. The main reef has been considerably worked at four levels. Of these No. 2 level and No. 4 level have been carried right through the hill, and the battery of five stamps is situated on the southern face of the hill, 150 feet below the opening of the fourth level. Cyanide plant was being installed in June, 1912, when the mine was visited. The "quartz" reef was the principal source of the gold at the time of the writer's visit and was worked from the main reef adit on No. 2 level. This mine has been producing regularly since crushing started in March, 1912, and the addition of cyanide plant should materially increase the percentage of gold won. The reefs can be followed to the northwards for about half a mile from the mine house down the somewhat steep slope leading to a spruit. Immediately on the northern side of this spruit a massive diabase dyke cuts the formations, including the reef. A further quartz reef crops out on the far side of this dyke, but as its continuation lies on the farm Kortnek No. 32, it has not been opened up, nor is it certain whether it is a continuation of the Klipwal reef at all. This farm and the area further to the north-east will be mapped in the course of the 1913 field-season, when further light will probably be thrown upon the question. The continuation of this reef in a southerly direction is also a matter of uncertainty. It can be followed for some distance below the southerly end of the fourth level, but the steepness of the slope and the accumulation of talus in the valley at its foot renders a definite statement impossible. It probably continues until it meets the fault to be immediately described, and may be referred to the system of reefs which mark this line of faulting. This is the oldest mine in the district, operations having commenced in the year 1898, and considerable sums were spent in developing the property. No records are available to show what gold, if any, was recovered. The mine was, however, in 1907 abandoned by the company which had developed it. In November, 1907, work was started again and the mine was worked on tribute, producing 4,290 ozs. of fine gold during the two years to October, 1909. From that time to January, 1911, nothing was done, when the prospecting [illegible] which has led up to its present activity.

The Golden Hill.—The workings known as Golden Hill lie in the direction of the immediate continuation of the strike of the Klipwal reef, but here the influence of the line of fault shown on the map is felt and the strata have been much twisted and broken. A reef similar in general appearance to that of the main reef, Klipwal Mine, can be seen on the northerly face of the Golden Hill, and this reef marks a line of fault and the strata dip away from it on either side at steep angles, which quickly diminish when the beds are followed along their dip to the west, and less slowly towards the east. This reef is stated locally to give good values, as well as various isolated and broken patches of ground all over the surface of the hill. A drive was put into the hill from the west in the hopes of striking the continuation of this reef along the fault-plane, but the latest advice is to the effect that the work had been abandoned. This fault can be well observed, where it cuts a noticeable band of quartzite outcropping, on the south-eastern face of the hill, the dip of the quartzites to the west of the fault measuring five degrees to the north, while on the east of the fault it is 20 degrees to the east. Thus we have here again reversed dips on the two sides of the fault-plane. The geology of the Golden Hill is very intricate and involved. The above-mentioned fault-plane traverses the hill, accompanied by subsidiary small dislocations, which have the effect of rendering extremely difficult any attempt to locate and correlate the various reefs and gold-bearing areas. In isolated and discontinuous patches very good values are reported to have been obtained, but a great amount of development and systematic work would be necessary to prove the property.

The Barbel Reef.—The fault traversing "The Golden Hill" passes through the claims of the Barbel Syndicate. The section immediately overlooking the Pongola River on the north shows the outcrop of the fault very plainly. A massive horizon of quartzite, dipping slightly to the west, bounds the western side of the fault-plane, while its easterly side is occupied by shales with thin quartzite horizons dipping to the east. The scale of the map does not allow of these details being shown. The "Barbel boulder," in which gold was first found near the river, was not seen, but was purported to have been part of a decomposed horizon of igneous rock interbedded with the strata found on the eastern side of the fault-plane. This rock has been worked here and there on the surface and apparently given very erratic results. A reef has been opened up further up the hill, which bears a very close resemblance to the main reef of the Klipwal Mine and to various outcrops on "The Golden Hill." The same red shaly schistose matrix is traversed by stringers of quartz, and the values are reported to be good.

The Vergelegen Mine. The above mine is situated on the southern side of the Pongola River, in the Vryheid district of Natal. The mine has been shut down for a long time. The reef here consists of a double band of quartz, separated by a band of shale like rock. The width of the upper quartz reef is 13 inches, while the lower one measures 10 inches. The intervening shaly rock has a thickness of about a foot. The dip of the reef is some 25 degrees and in a direction east eight degrees north. The quartz is white and massive. The important point to be noted with regard to the geology of these three gold occurrences lies in the fact that all three are situated on or near the line of fault above referred to. The outcrop of the fault can be very easily traced from the Barbel reef to the Vergelegen Mine, passing as it does through a country rock composed of shales with quartzite beds interstratified. These latter can be seen bending round in turn and ending abruptly against the fault. The Klipwal Mine and the Wonder Mine, while not actually on the line of fault, are both sufficiently near to constitute the chief gold bearing zone of this area as occurring in connection with and along this line of faulting. The recent discoveries of gold on the farm Bongaspoort are in a direct line with the other occurrences, and although this fault was not observed upon Bongaspoort as a continuation of the one above described, yet the occurrence of gold along the same line is significant. In this area dislocations seem frequently to occur along planes whose outcrops coincide with the outcrops of diabase dykes, and on the farm Bongaspoort is a noticeable example. The massive system of diabase dykes developed on the north of the farm Klipwal marks the northerly termination of the gold-bearing line of fault passing southwards through Klipwal, Wonderfontein and Vergelegen on to Onverwacht No. 395. This dyke massif breaks up on Bongaspoort into three distinct dykes, striking in directions roughly north and south. The most easterly of these dykes coincides with a line of faulting as above mentioned. The quartzite and shale horizons traversing Bongaspoort in approximately north-east and south-west directions here abruptly terminate against the dyke and are not continued to the west. It is true that the more southerly of these horizons bend to the south, and the phenomenon here is merely one of igneous intrusion, but the more northly horizons are displaced, as well as broken, by the dyke.

Summary.—It will be seen from the above description that the occurrences of gold which have so far been found to repay development in this area are all in conjunction with quartz reefs. The Wonder Mine and the Klipwal Pongola have each had periods of prosperity, followed by periods of inaction, while none of the other propositions have advanced beyond the development stage. In the case of the Klipwal Pongola Mine a further period of activity is in progress at the present time. The line of faulting pointed out above as marking the location of the principal occurrences of gold at present worked might repay careful prospecting, while the broken and dislocated tract covering the eastern portions of Breda No 261 and Vergelegen No. 373 appears a promising field. Kortnek No. 32, Bongaspoort No. 26. Bergvliet No.

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[*] Abstracted from the Geological Survey Report, 1912.

[†] "The Mineral Resources of Natal," p. 30.

[‡] Statistical Bureau, Mines Department, Johannesburg.

452 (Vryheid), and Onverwacht No. 395 (Vryheid) contain many quartz reefs which might be advantageously prospected. Quartz reefs are, in fact, common over the whole area covered by the rocks of the Pongola Series, and when these occur in connection with lines of faulting, experience has shown that values are usually obtained.

Conglomerates. The gold-bearing conglomerates, which have been examined, vary very much in general appearance. Connected with the lowermost massive quartzite of the Upper Pongola Series and forming its basal bed is found a conglomerate which has been opened up to some extent on the farm Gunstelling No. 21 (Piet Retief). The whole rock has a dark handsome glistening appearance due to the inclusions of quartz. An assay carried out in the laboratory of the Geological Survey showed the rock to contain no trace of gold. This banket follows this horizon of quartzite and was noted on the farm Roodeval No. 257 (Vryheid). On the farm Onverwacht No. 395 is an interstratified conglomerate, which can be followed from the fault on the western boundary of the farm eastwards until it passes underneath the development of dwyka conglomerate, which occupies the eastern portion of the farm. This differs evry considerably from that above described. The matrix is white to yellowish in colour, somewhat ferruginous, and felspathic looking. It is somewhat weathered, and contains small rounded pebbles of transparent white quartz and larger pebbles of black shale and white cloudy chert, varying in size from that of a small bean downwards. In general appearance this rock is uniform and rounded, the rounded pebbles standing out fairly evenly and very different from the somewhat brecciated appearance of that to be presently described occurring on the farm Eldorado. On assay the conglomerate [illegible] a gold content ·45 dwt. per ton of 2,000 lb.

Eldorado Banket. This conglomerate is interstratified between quartzite and shale on the farm Eldorado No. 13. It forms part of the escarpment forming the steep slope leading up to the top of the flat-topped mountain lying to the north-west of the farm. It can be followed for a long distance, showing good outcrops around the face of the hill and descending to the Itala River on the farm Doornkraal. The matrix is here quartzitic and fine to coarse in consistency. The pebbles are irregular and somewhat angular in shape and vary in size up to that of a small bean. They consist principally of white chert, and white and banded cherty rocks with square or triangular outlines. Smaller and more rounded grains and pebbles of quartz occur, both glassy and opaque; also small pebbies of pale green serpentine and blue shale. The great majority of the pebbles, however, consist of opaque white quartz. In general appearance this conglomerate appears brecciated and angular in detail, and of general pinkish colour set with white and grey inclusions. On the weathered surface the pebbles appear white and flattish, with rounded or elongated surface and a central coating of red ferruginous matter.

THE SMELTING OF TIN ORE IN THE ELECTRIC FURNACE.*

The supposition that the electric furnace is inappropriate for the smelting of tin ores, on account of its high temperature, is without foundation; for, as a matter of fact, the reduction of tin oxide by carbon requires a very high temperature, especially if the impurities are to be eliminated. The partial reaction produced in the reduction of tin oxide by carbon is

$$SnO_2 + C = Sn + CO_2 \text{ (1)}.$$

but the reduction of at least two-thirds takes place according to the equation

$$SnO_2 + 2\,C = Sn + 2\,CO \text{ (2)}.$$

The carbonic oxide burns outside the furnace, and also acts as a reducing agent on traversing the charge. Under appropriate conditions and after some hours of working, the reactions (1) and (2) take place equally. For this purpose we need theoretically 665 kilowatt-hours per ton of ore. Moreover, we have to bear in mind the quantity of heat necessary to raise the charge to the required temperature, which amounts to from 1,400 degrees to 1,600 degrees C. in the reaction zone. The total consumption of energy per ton required may be estimated as follows: Reduction, 665 kw.-hours; slag, 130 kw.-hours; specific heat, 65 kw.-hours; radiation, 130 kw.-hours; gases, 150 kw.-hours; total, 1,140 kw.-hours. The first experiments, conducted by Mr. A. F. Maclaren in London, were followed, in 1911, by others undertaken by Dr. Walmsley in the Northampton Institute. A continuous current of 300 amperes and 100 volts were actually used, which was quite inappropriate, on account of the excessive heat dispersed at the positive pole, and of elelectrolytic action set up in the slag. The first experimental furnace was analgous to that used by Harmet in the reduction of iron ores. It consisted of a chamber constructed of magnesite bricks, and having a lining of tar and magnesite. The arch had a charging-hole. The inside diameter was 140 millimetres, and the total height 356 mm. Two inclined bars of carbon, each 13·5 mm. in diameter, served as the electrodes. The apparatus had no water circulation for refrigerating purposes. In the first experiment the charge consisted of 3 kilogrammes of ore, containing 63 per cent. tin, 2·3 k. of coke-powder, and 2·3 k. of flux, but, owing to want of sufficient current, only 5·5 k. of ore were actually reduced. The consumption of energy amounted to 40 kilowatt hours—viz., 15 in heating and 25 in reduction. The fusion gave 2·4 k. of tin in bars and 0·6 k. of residues, corresponding to a yield of 85·5 per cent. The slag was very irregular, and the consumption of current amounted to 8,960 kilowatt-hours per ton of tin. In another experiment, 2·9 k. of pure tin and 1·1 k. of residues were obtained from 7·3 k. of ore, or a yield of 90 per cent., with a consumption of energy at the rate of 4,900 kilowatt-hours per ton. The metal contained 99 per cent. of tin, and a little iron, but no arsenic. When working under good conditions the slag ran well on tapping, was grey in colour, had a vitreous lustre, and contained, on an average, 0·5 per cent. of tin. The electrolysis of the slag, melted down with soda carbonate and dissolved in water, gave a good deposit of tin on iron cathodes, but the yield was not very high, and the consumption of energy was at the rate of 1,820 kilowatt-hours per ton. After the preliminary tests, experiments were conducted on a large scale. The current, obtained from a Diesel plant, was a three-phase alternating one of 50 periods, and from 650 to 675 volts. By means of an oil transformer, a current of 30, 40, 50 or 60 volts could be produced at will in the secondary circuit. The primary circuit was furnished with a registering watt-meter, and the secondary one of each phase with an ampere-meter. The conducting bars were united to the electrodes by flexible wires, avoiding as much as possible the phenomena of induction. A shaft furnace was used, provided with special patented arrangements. It contained three electrodes with carbon-bearers, and means of regulating the same. The formation of a direct arc was avoided. The charge formed a cone round the reaction zone, in which the electrodes burnt freely, surrounded by incandescent gases, which served as resistance. Certain arrangements made avoided the loss of metal by volatilisation, which loss was under 0·5 per cent. Tap-holes for metal and slag were at different heights. When the holes became closed by a slag very rich in iron, they were opened by the aid of an auxiliary electrode. The oxiacetylene flame served the same purpose. The furnace was first heated with a small fire of wood or coke. To 100 k. of ore were added, on an average, 14 k. of culm. At the commencement of the charge the furnace was worked with 60 volts and approximately 1,000 amperes per phase; afterwards the normal current was applied (60 volts, 2,500 amperes). In one special case the tension fell to [illegible] volts. At the beginning of the charge the variations of current were relatively high, but ceased immediately on the electrodes burning freely. After half an hour the first tapping of metal took place, the slag being tapped after the lapse of several hours. The slag was vitreous, dark green and fluid. After several hours' running, arsenides and sulphides of iron were introduced at regular intervals in order to avoid the formation of hard slags. By this means a metal containing 98 per cent. tin was obtained from very impure ores. With ordinary Bolivian ore, containing 49·5 per cent. tin, and approximately 15 per cent. iron, an average yield of 92 per cent. was obtained, and it sometimes reached as much as 97 per cent. The liquid metal was refined in shaft-furnaces containing iron tubes for the injection of air. By this simple means a commercial purity of 99·76, and even more, per cent. was obtained. Finally, the metal was cast into pigs. The three factors—yield of tin, consumption of energy and loss in slag—are inter-related within narrow limits. It is easy to obtain a slag containing only 0·25 per cent. tin, but then the process is not an economical one, as the consumption is 3,000 kilowatt-hours per ton of metal. On the other hand, with a slag containing 17 to 19 per cent. of tin, the consumption of energy can be reduced to 1,300 kilowatt-hours per ton of metal—but this, again, is not economical, as the rich slag cannot be worked afterwards. An economical run can be obtained between these two extremes, with an extraction of over 96 per cent. of tin. As a typical example, we quote the average of the results obtained during a week's continuous run. The yield was 96·75 per cent., the consumption of energy was as follows:—Heating, 1,178 kw.-hours; reduction, 13,935 kw.-hours; total consumption, 15,113 kw.-hours. This corresponds to 2,200 kilowatt-hours per ton of tin. The consumption of electrodes amounted to 12·7 k. per ton of metal. During some days the expenditure of current descended to 1,700 kilowatt-hours per ton. The mineral was very moist (15 per cent. water), which naturally increased the expenditure of energy. The electric smelting of tin ore gives a high yield. By using two furnaces of sufficient size—the second one for the extraction of the tin from rich slag—the consumption of energy can be reduced to 1,400 kilowatt-hours per ton. The electric furnace yields a pure tin continuously, and from the first, which is certainly not the case with the reverberatory furnace. Moreover, as compared with the latter, the hand labour is less, as two workmen are sufficient for one furnace, and the space occupied by the furnace is much reduced. The consumption of electrodes is so small that it need not be taken into account. The electric process can be advantageously employed in places where the ores are good, but not very rich, and where waterfalls can be utilised for supplying the power needed.

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*From *La Revista Minera y Metalúrgica de Madrid*, 1913. (An article based on the experiments carried out by Mr. H. Harden in Cornwall, and described in the *Elektrotechnische Zeitschrift*.)

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Rhodesian Section.

LATEST MINING NEWS.

Wankie Colliery—Redrup's Kop—Copper Near Lusaakas.

Presiding at the annual meeting of the Wankie Colliery Company held in London the other day, Mr. Edmund Davis observed that the accounts submitted showed a further improvement on those presented last year and a continuance of the progress to which he then referred. In the accounts to August 31, 1912, the balance of profit brought into the balance sheet amounted to £25,612, whereas in the present instance—namely, to August 31, 1913—it amounted to £36,944, an increase of £11,332, and, owing to this satisfactory increase the board recommended that the dividend be at the rate of 17½ per cent. per annum, of which shareholders had already received 7½ per cent. by way of interim dividend on March 29 last, and the balance of 10 per cent. it was proposed should be paid to all shareholders on the register on the 19th inst. The dividend would absorb £35,457, leaving £16,512 to be carried forward. Turning to the profit and loss account, the company had sold during the 12 months covered by the accounts 170,326 tons of coal, comparing with 162,816 to August 31, 1912, but there had been included in the £118,706 appearing in profit and loss acount, the sales of coke, firebricks and fireclay, and profit on consignments, the total being an increase of £37,162, comparing with the previous accounts, the difference being principally due to large sales of coke. In connection with this matter the directors desired to draw attention to a paragraph in the report under manufacture of coke, whereby shareholders would notice that the company had renewed the contract with the Union Minière du Haut Katanga for a further 12 months at the rate of 1,500 tons per month, and this, with another contract they were negotiating, and which they hoped to complete within the next few days, should—provided the mining company with which they were negotiating started to take supplies during the present financial year—mean an increase in the tonnage sold during the period covered by the next accounts. At the previous meeting, held on November 26, 1912, he referred to the steps they were taking to increase the consumption of coal in Rhodesia, and in this connection they had within the last few weeks entered into a contract with a new customer for the supply of 1,650 tons per month for a term of five years, the supplies to commence from January 1 next. But, though they had done all they could to meet consumers in the past, they had not increased the company's sales as much as expected, this being principally due to the destruction of the valuable timber in Rhodesia, where the Government allowed it to be used as fuel without any reservation being made in the direction of afforestation. The capital expenditure the company were incurring in connection with the additional washing and coking plant was somewhat large, but this they were meeting out of the company's resources, and should in the course of time lead to an increase in their profits, provided they were able to make satisfactory coke contracts beyond 1914. In connection with this matter negotiations had been pending for some time past. From what the directors could at present see he thought they might go so far as to say that the results for the current financial year should at least be as good as those for the past.

* * * *

The directors of the Forbes Rhodesia Syndicate are offering for tribute the Redrup's Kop property. The property is fully equipped with a suitable reduction plant for the treatment of 1,800 tons a month, including five-stamp mill (Chilian), sands and slimes plant, pumps, etc. There is also a permanent water supply. It is estimated that there are over 6,000 tons of payable ore read for stoping.

* * * *

We understand that a further discovery of copper has recently been made in North-Western Rhodesia. Mr. Sidney Dyer, of Bulawayo, has recently been visiting the proposition in question, which is situated close to Lusaakas.

MINING MEN AND MATTERS.

Mr. Frank Raleigh has returned to the Rand.

* * * *

The ordinary general meeting of the South African Institute of Electrical Engineers was held in the lecture theatre of the School of Mines last week. Mr. T. F. Whimster read a paper on "The Electrical Testing Work of a Large Power Company," which was illustrated by lantern slides. The paper was followed with the closest attention, and the lecturer was loudly applauded at its conclusion. Mr. T. Batey gave a demonstration of the methods of firing instantaneous and time fuses by electricity, and related amusing instances of failures in the early experimental stages of electric blasting on the Rand. The meeting afterwards dealt with matters affecting alterations of the rules.

Pretoria Portland Cement Co.

The directors of the Pretoria Portland Cement Co. notify the declaration of a dividend (No. 12) of 20 per cent. (4s. per share) for the half-year ending the 31st of December, payable to shareholders registered on that date. The dividend will be paid on or about the 15th of January. The amount to be distributed is £30,000.

Premier Diamonds.

The directors of the Premier (Transvaal) Diamond Co. notify the declaration of a dividend (No. 11) on the deferred shares of 350 per cent. (8s. 9d. per 2s. 6d. share), payable to shareholders registered on the 31st of December. The dividend will be paid as soon as the necessary returns have been received from the London office. The amount to be distributed is £140,000. The directors add a footnote to the declaration to the effect that the earnings for the second half of the year would have enabled 10s. per share to be distributed, but that in view of the temporary depression in the diamond market, it has been considered expedient to further strengthen the cash resources of the company.

Wolhuter Gold Mines.

Revenue, £124,615 15s. 1d., or £1 7s. 9·23d. per ton from 89,750 tons milled; cost, £81,597 4s. 8d., or 18s. 2·199d. per ton; profit, £43,018 10s. 5d., or 9s. 7·035d. per ton; capital expenditure, £5,759 18s. 3d.; development, 3,170 feet; yield, mill, 21·666 ozs.; cyanide and slimes, 8,113 ozs., or 6·614 dwts. per ton milled. Tons developed or exposed during the quarter (includes ore mined from development).—Assumed payable tonnage: Deep level, 52,688 tons; assay value, 6·40 dwts. over 54·8 inches; east incline, 39,288 tons; assay value, 6·02 dwts. over 66·4 inches; mynpacht, 4,002 tons; assay value, 5·70 dwts. over 47·0 inches; totals, 96,978 tons, assay value 6·21 dwts. over 58·6 inches. The ore reserves are being re-calculated, and will be shown in the annual report. The machinery and plant continue in good working order. The electric hoist, auxiliary shaft, has been erected, and is now running. A new white change house (M.V.S.) and new slimes tanks are in course of erection.

THE WEEK IN THE SHAREMARKET.

Firm and Quiet—Holidays Restrict Business.

A HOLIDAY spirit pervades the market, and though prices are firm all round little business has been done. The dividend declarations have created an excellent impression, and Mr. Munro's speech at the Chamber of Mines meeting had a good effect. Diamonds are still the only active counter, and Pilandsbergs have again enjoyed fluctuations. It is not expected that business will brighten until the holidays are over.

* * *

	Wed., 17th.	Thurs., 18th.	Fri., 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.
Adair-Ushers	—	-		0 3*		--
African Farms	15 0	15 6	14 9	15 0	14 9*	15 0
Apex Mines	20 0†	19 0†	-	18 6*	18 6	19 0*
Bantjes Consolidated	14 6	14 0	15 0†	14 0	14 0	14 3*
Benoni Consolidated	-	-		-	2 4	—
Brakpan Mines	46 0*	47 6*	47 6*	46 0*	47 6*	49 0*
Breyten Collieries	29 0	28 6	28 9	27 9*	30 0†	30 0†
British South Africa	18 0			—	—	18 0*
Bushveld Tins	0 6	0 6	0 7†	0 6*	0 7†	0 6
Cinderella Cons.					3 0	3 0*
City and Suburbans	48 0†	48 0†	47 3*	47 9	47 6	48 0
City Deeps	53 6	53 6	53 6*	53 9	53 9*	-
Cloverfield Mines	4 3*	4 3*	4 2*	4 3*	4 3*	4 3
Clydesdale Collieries	—	-	8 0*	—	—	-
Cons. Investments	—	16 3*	16 6	16 0	16 6*	-
Cons. Langlaagtes	28 3*	28 6*	28 6	29 0†		
Cons. Main Reefs	17 0*	17 0*	17 0*	17 0	17 0*	17 0
Cons. Mines Selection	6 0		7 6†	7 6†	7 6	7 0
Coronation Collieries		12 6*	12 6*	12 6*		
Coronation Freeholds	0 5*	0 5*	0 5	0 5*	0 5*	0 5*
Crown Diamonds	7 6	7 9*	7 6	8 0	7 9	7 9
Crown Mines	—	122 6*	—	—	—	—
East Rand Centrals	8 0*	8 0	8 0*	8 0*	8 0*	8 0*
East Rand Coals	1 10*	1 10*	1 10*	1 10*	1 10*	1 10*
East Rand Deeps	1 3	1 6†	1 2*	1 0*	1 3*	1 3
East Rand Props.	40 0*	40 0*	40 0*	40 0	40 0*	40 0*
East Rand Debentures	£87½†	—	£84*		£87½†	£87½†
Eastern Gold Mines	1 0	1 0	1 0*	1 0*	1 0*	1 0*
Frank Smith Diamonds	6 0*	6 0	6 0	6 0	6 4	6 0
Geduld Props.					21 0	
Glencairn Main Reefs		3 0*	3 3*			3 3*
Glencoe (Natal) Collieries	-	7 0*	7 3*	—	8 0†	—
Glynn's Lydenburgs		-	—	-	12 9†	12 6†
Government Areas	18 0	18 0	18 0*	18 0*	17 9	17 9
Jupiters	4 0*	4 0*	3 9*	4 0	4 0*	4 [illegible]
Kaalfontein Diamonds	0 5*	0 5*	0 5*	0 5*	0 5*	0 6
Klerksdorp Props.	2 0†	2 0†	1 11*	1 11*	1 11*	1 11*
Knight Centrals	7 3	7 1*	7 0*	7 3	7 1*	7 3*
Lace Props.	2 6*	2 6*	2 6*	2 6*	2 6	2 6
Langlaagte Estates	—		16 0*		-	
Luipaardsvlei Estates		8 6*	8 6*	-	8 6*	9 0*
Lydenburg Farms	2 9	2 9*	2 9*	2 9*	2 9*	2 9*
Main Reef Wests	6 3†	6 6†	5 6*	6 6	6 0*	6 3
Main Reef West Debs.	£64*	£60*	£61*	£61½*	£62	
Meyer and Charltons				106 3*	106 3*	
Middlevlei Estates	0 9*	0 9*	0 9*	0 9*	0 10*	1 0
Modderfontein B.	78 6	79 0	81 0*	80 6*	81 0*	81 0*
Modderfontein Deeps	36 6	36 9	36 9	36 9*	36 9*	37 6*
New Boksburgs	0 9	0 9	0 9		1 1	[illegible]
New Eland Diamonds	25 6	26 0*	26 0*	27 0		26 6*
New Era Cons.		5 0	5 0*	0 5*	5 6*	5 0
New Geduld Deeps	1 9	1 9	1 9	1 9*	1 9*	1 9*
New Kleinfonteins	21 9	22 6	23 0*	23 [illegible]	23 0	23 [illegible]
New Modderfonteins	225 0	236 0		23[illegible]	23[illegible]	235 0
New Unifieds	—	—	14 9†			
Nigels					17 0	
Orange Diamonds	1 6*	1 7	1 6*	1 7	1 7	1 7*
Piggs Peak	9 0*	9 0*	9 0*	9 0*		9 0
Pretoria Cements	46 0*	47 0†	45 0	47 0†		47 0†
Princess Estates	4 0*	—		4 6	4 [illegible]	
Rand Klips	2 0	1 11*	2 0	2 0*	2 0	2 0
Rand Nucleus	1 6*	1 6*	1 6*			1 [illegible]
Randfontein Deeps	—	2 9*	—			
Randfontein Estates	—	23 0	—	23 0*	23 6	
Roberts Victors	29 6*	30 0*	30 0*			30 0*
Robinson Deeps		—	28 0	28 6	29 6	30 0*
Rooiberg Minerals		27 0*	27 3	26 0	26 0	
Ryan Nigels	3 0*	3 0*			3 0	3 0
Shebas	5 0*	5 0	5 0*	5 0	5 0*	5 0
Simmer Deeps	1 0	1 0*	1 0	1 0	1 6*	1 [illegible]
S.A. Breweries	45 0†		39 3*		40 0†	
S.A. Diamonds	30 0*	30 0*	-			
S.A. Lands	2 10*	2 11	2 10*	2 10*	2 10	2 10*
Springs Mines	10 3*	10 6		10 9*	10 6	11 0

*Buyers. †Sellers.

	Wed., 17th.	Thurs., 18th.	Fri., 19th.	Sat., 20th.	Mon., 22nd.	Tues., 23rd.
Steyn Estates	[illegible]	—				
Sub Nigels	7 9	7 9*	8 0*	8 0*	7 6	8 0*
Swaziland Tins	45 0†	44 0†		[illegible]	44 0†	
Transvaal and Delagoa	40 0*	40 0*	40 6*		40 0*	
Transvaal Coal Trust	30 0†	30 0	30 0†	29 3*	29 3*	30 0
Transvaal Cons. Lands	19 3*	19 0*	19 0*	19 [illegible]	19 0*	19 [illegible]
Transvaal G.M. Estates	50 0†	50 [illegible]	49 0†	49 0†	48 6†	
Tudors	2 0†		2 0†			
Van Ryn Deeps	35 6	35 6	35 3	35 3	35 [illegible]	35 9*
Village Deeps	34 [illegible]	34 0†	34 6	34 0*		35 [illegible]
Vogel Cons. Deeps		-	[illegible]	0 6*		
Western Rand Estates	-	-			2 0†	
Witbank Collieries	41 [illegible]	41 6*	41 6*	43 0†	41 [illegible]	
Witwatersrands	69 0*	69 [illegible]	70 0†	69 6	68 0*	69 0*
Witwatersrand Deeps	55 9*	55 6*	55 [illegible]	56 [illegible]	55 0	5[illegible]
Wolhuters	12 3		12 6*	12 6	12 3	12 [illegible]
Zaaiplaats Tins	31 6	31 6*	31 0*	3[illegible]	30 6	31 0

*Buyers. †Sellers.

Breyten Collieries.

Mr. C. D. Leslie, in his annual report, writes as follows: The coal won continues to be of good quality, and the seam thickness of coal has been maintained in each section of the workings, although a temporary thinning out of the seam in No. 1 mine took place in August last. The output of marketable coal was increased for the year by 57,498 tons. The plant, which is in good running order, has been increased to a capacity of only 45,000 tons per month, as it was not necessary to effect an increase to 55,000 tons per month, for which expenditure had been authorised. Your collieries have been handled in a most expert and enthusiastic manner by your manager, Mr. W. H. Lewis, and his able staff, who have been unrelaxing in their efforts to get the best possible results consistent with fair mining.

National Diamonds.

An extraordinary general meeting of the National Diamond Prospecting and Developing Syndicate, Ltd., will be held at the Board Room, Consolidated Buildings, Fox Street, Johannesburg, on the 9th day of January, 1914, at 10.30 o'clock in the forenoon, when a resolution will be proposed that the Articles of Association be altered in several particulars.

Witwatersrand Deep.

During the quarter ended September 30 the Witwatersrand Deep made a profit of £84,008 7s. 5d., equal to 12s. 9·30d. per ton milled. On capital account an amount of £10,478 14s. was expended. The south incline shaft has been sunk 67·5 feet to a total depth of 76·5 feet. The west incline shaft has been sunk 90 feet to a total depth of 1.858 feet, and timbered 60 feet to a total depth of 1,765 feet. The No. 3 north incline shaft has been sunk 11·5 feet to a total depth of 245·5 feet, and timbered 45 feet to a total depth of 230 feet. No. 3 north incline shaft has been widened 35 feet to a total depth of 234 feet. On development there was accomplished a total of 3,756 feet. Of the total development 2,443 feet or 65·04 per cent. has been on reef. Altogether 2,276 feet have been sampled. This total comprises 1,750 feet or 76·89 per cent. averaging 10·86 dwts. over 45·87 inches and 526 feet or 23·11 per cent. averaging 4·14 dwts. over 30·08 inches. The ore reserves at September 30 amounted to 1,599,888 tons. The amount of water pumped for the quarter was 118,585,400 gallons and cost £3,494 5s. nett to pump, equal to 6·38d. per ton milled.

Three facts regarding the Transvaal worth remembering:

(1) The Transvaal is producing over one-third of the world's gold output.

(2) Transvaal mines have spent 24 millions sterling on machinery and plant.

(3) The *South African Mining Journal* is the official organ of the Mine Managers' Association.

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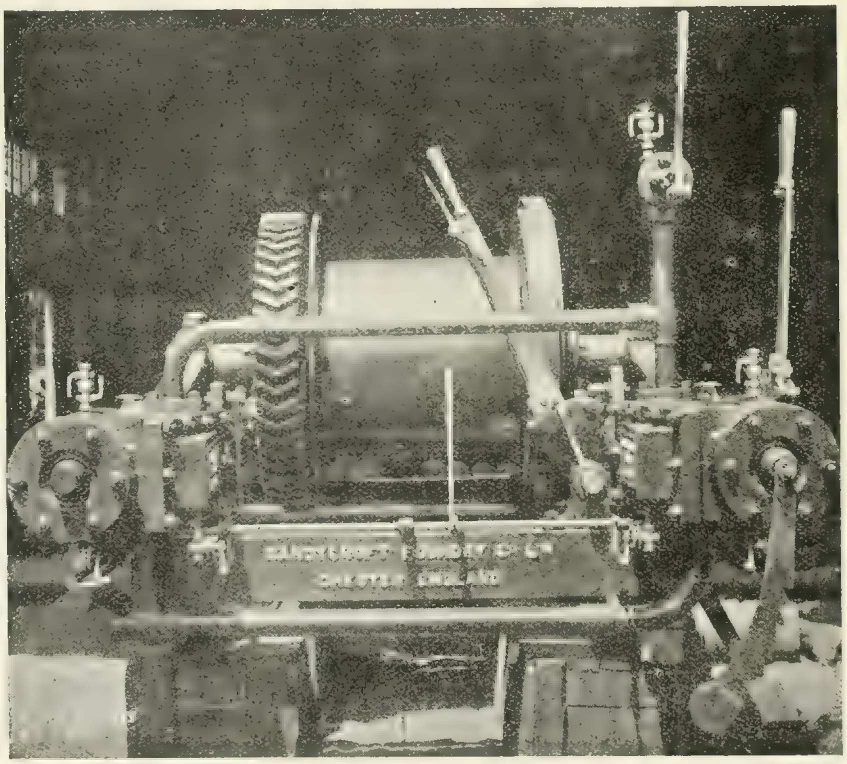

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Engineering Notes and News.

RAILLESS ELECTRIC TRACTION.*

Application of the Various Systems to South Africa.

[By Professor J. H. Dobson.]

The paper, entitled "Railless Electric Traction," read before the South African Institute of Electrical Engineers by Mr. J. W. Westwood, gives a brief but concise account of the various systems that have been evolved, the chief of which may be said to be the "Cedes Stoll" system and the "R.E.T." system, and the author is to be congratulated on presenting a technical description of these systems to the Institution. Most tramway managers and others connected with the traffic problem regard the railless electric traction system as a practical system from the point of view of running, there being a choice from the various systems in existence as described by Mr. Westwood, to obtain the most suitable type, taking all the local conditions into consideration. The title of Mr. Westwood's paper is "Railless Electric Traction," but he does not confine himself strictly to this subject in his paper, but irresistibly touches briefly on the general problem of railless traction, and makes statements of comparative costs, set forth on pages 242 3. In this way the author has opened up a subject of a very controversial nature, and incidentally his paper is open to severe criticism. In the first paragraph of his paper he says: "In engineering circles in this country the subject (railless electric traction) does not appear to have attracted the attention of engineers to any extent." There can be no doubt that, so far as railless electric traction is concerned, the subject has received the most careful consideration of all engineers in this country who have to deal with transport problems. There is evidence of this in connection with the Municipalities of Bloemfontein, Germiston and Boksburg, the engineers of which have not only considered the question, but have decided to instal a system of railless electric traction in their respective municipal areas, whilst in other places where the problem has been just as carefully considered, the motor omnibus has been chosen to provide means of passenger transport where a large capital expenditure is not justified. In the controversial parts of Mr. Westwood's paper, the statistics which he has given show that he is predisposed to favour the electric system of railless traction as compared with other systems, and it has been suggested to me by the President (Mr. Kirkland) that I should bring before the notice of the Institute a report written by the writer and presented to the Municipal Council of Johannesburg in August, 1912, the subject of this report being "The Future Aspect of Tramway Extensions as applied to the Johannesburg Municipality."† The cost of road-making and road maintenance was given careful consideration in dealing with the comparison of the various systems as applied to Johannesburg. This was a most important point touched upon by Mr. Robert Hammond in his remarks at the last meeting. Another very important point in regard to the Johannesburg Municipality tramway system is the relatively cheap sleeper track construction for outlying extensions. This cheap sleeper track construction is uncommon experience in the Home country, and it very seriously affects the proper comparison between the "car on rail" system and the railless electric traction system. Everyone would prefer to travel in a tramcar on rails than on the best railless system running on solid tyres that has ever been made, and, as Mr. Hammond points out, it is imperative that there should be good roads. In the report to the Municipal Council, the point was emphasised that if the charges on the capital expenditure and maintenance on road works were equal to the additional capital charges and the relatively small repairs and maintenance on the cheap sleeper track construction, the case for the railless electric system falls to the ground. The Council of Johannesburg accepted the report *in toto*, and six motor buses are on order, two of which have been running for several months between Fordsburg Station and Newlands, a distance of approximately four miles. After the experience gained on the ordinary petrol omnibus and the petrol-electric omnibus, the latter type has been chosen as the most suitable and the most economical, taking everything into consideration—a result which has also been determined by the London General Omnibus Company and other places. Mr. Westwood states: "No apology is offered for the dearth of statistics in this contribution," and in another part of the paper states that: "Data with regard to petrol busses has been hard to get, but it is believed that the only places where they are run at a profit are in thickly congested areas, such as prevail in the City of London. Also, the only figures available with regard to running costs of these buses show a cost per car mile of 1s. to 1s. 8d. in the provinces and 10d. to 1s. in the City of London, and the life as being about four years, whereas the cost of the railless electric system per mile are usually in the neighbourhood of 5d." There is no explanation of the basis of Mr. Westwood's comparison either as to passenger-carrying capacity or whether they are total costs per car mile or simple working costs. In any case, the figures for the purposes of comparison are calculated to mislead the public as to the true value of the railless electric system from a financial point of view; as, if it were true that "running costs" per car mile of the railless electric system were 5d., as compared with the running costs of omnibuses of 10d. to 1s. in the City of London and 1s. to 1s. 8d. in the provinces, the subject of railless traction would no longer be a controversial one, but everybody would go for the more economical system, which on page 242 Mr. Westwood makes out to be the railless electric system. As evidence that these figures are misleading and inaccurate, I refer to the paper read by Mr. A. H. Pott, entitled "The Respective Values of Tramways, Motor Buses and Railless Trams as Means of Transport," at the Swansea Congress to the Tramways and Light Railways Association. A copy of this paper is printed in *The Electrician* of 5th July, 1912, and on page 522 reads: "The following table gives average figures for the working costs of each system taken from fair-sized undertakings." The table shows the total cost per car mile of: Ordinary tramway, 8·02d. per car mile; motor omnibuses, 7·46d. per car mile; railless electric system, 6·06d. per car mile; and it is pointed out in the paper that, as the basis of comparison is not a proper one owing to payment for servitude on roads, petrol taxes, road maintenance, etc., the author and other contributors to the paper make out the costs to be approximately 7d. per car mile for each, there being but a negligible difference between the railless electric system and the motor omnibus system, when everything is taken into account. These figures are widely different to 10d. and 1s. in London and 1s. to 1s. 8d. in the provinces, as stated in Mr. Westwood's paper. Turning now to the experience in Johannesburg, the costs per car mile are, including all capital charges and life of the cars at four years, about 1s. 4d. per car mile. There have been certain heavy initial costs due to various alterations that have been found necessary, but in any case it is expected that the costs will not exceed 1s. 6d. per car mile. Neither the cost of road maintenance nor any taxes are included in the above costs for petrol omnibuses, but in any case these would be common to ordinary omnibuses and railless electric traction. These figures are again less than the 1s. 8d. referred to in Mr. Westwood's paper. Speaking generally, the question as to which system to adopt for the transport of passengers to remote and sparsely populated districts can only be determined after close examination and study of all the local circumstances. Obviously the petrol omnibus has no competitor where electrical energy is not produced at a relatively cheap rate, and the writer does not agree that the railless electric system is the most adaptable for conditions north and south of the railway lines along the Witwatersrand, as seems to be inferred by Mr. Westwood, nor cheap rate, and the writer does not agree that the railless electric system would be of much use for the supply of light, power, etc., for domestic purposes. The railless electric system will always have associated with it the disadvantages of an expensive station electrical equipment and feeder cable system, as well as the overhead equipment necessary for giving electric supply, which makes it an inflexible arrangement in that the traffic is confined to a particular route, and in sparsely populated places common to the Witwatersrand the cheap sleeper track construction with the ordinary car on-rail system becomes a serious competitor, especially if railless vehicles are charged for road maintenance, such as is the case with the ordinary car-on-rail system. The writer would hesitate to instal a railless electric system in any place where there is a doubt as to the possible revenue obtained from passenger traffic, preferring to adopt a cheap system in the first instance to pave the way for the more permanent system of tramways. It may be stated that this was what was done in Leeds, where the railless electric system has been adopted as an improvement on what might now be called an obsolete motor

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*Paper read by Professor J. H. Dobson before the S A I of E E.

†Copies of this report may be obtained by any one interested on application to the author, whose address is P.O. Box 699. Johannesburg

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omnibus service, but the motor omnibus of to-day is much more satisfactory, and the advantages of the railless electric system are consequently not so obvious. In dealing with the subject of his paper, Mr Westwood has entirely left out of consideration the question of an electrical vehicle fitted with accumulators as the source of electric supply. Owing to the great improvements that have been made in recent years in electrical accumulators, in particular that of the Edison battery, the battery tramcar demands serious consideration. The writer has no available statistics that would apply locally to form any comparison, but the firm of A. H. Johnson & Company, of Johannesburg, will shortly place a vehicle, fitted with electrical accumulators, at the disposal of the Municipality of Johannesburg, to determine the cost per car mile of this type of vehicle. From the information placed at my disposal from the Durban Borough Electrical Engineer's office as to the running of electrical vehicles fitted with Edison batteries in Durban, the results should be highly satisfactory, and in the meantime engineers of South Africa will be content to wait for results which will become known when the railless electric systems of Bloemfontein, Germiston and Boksburg have been running some time. Reliable statistics will then be available, as also on the Johannesburg Municipal motor omnibuses, and the problem as to which kind of transport is most adaptable to sparsely populated districts will be solved.

New Patents.

585. John Drinnan.—Improvements in plug cocks.
586. Thomas Harrison.—A new type of roller.
587. Claude Arnold Ripper.—Improved gas stove or range and attachments therefor.
588. Alfred Edwin Davis.—Improvements in and relating to apparatus for transporting material in mines.
589. Arnold Albert Musto.—Improvements in percussive boring apparatus.
590. Walter Brewitt.—Improvements in the process of welding rails or the like and apparatus to be used therein.
591. Henry Jacques Gaisman.—Improvements in safety razors.
592. Henry Squarebrigs Mackay.—Process for extracting metals from low percentage ores.
593. Carl Davenport.—Winding and haulage drums.
594. Sydney Renoden Wycherley.—Improvements in temporary binders or loose leaf ledgers.
595. Charlie Beatson McMullin.—A hand lashing rake.

Knights Deep.

The development footage accomplished at the Knights Deep during the quarter ended October 31 amounted to 705 feet, of which 485 feet were sampled, with the following results:—Main Reef: Driven, 215 feet; reef width, 54·3 inches; reef value, 10·94 dwts. South Reef and Main Reef Leader: Driven, 270 feet; reef width, 26·9 inches; reef value, 6·92 dwts. Totals and averages: Driven, 485 feet; reef width, 39·0 inches; reef value, 10·10 dwts. The reef is rarely a compact body, and when stoped at a probable width of 65 inches the value becomes reduced to 6·1 dwts., and is still further reduced by the time it reaches the mill by the mixture of some reclamation and development rock, etc. The working profit for the quarter was £39,647. On account of the acute shortage of native labour it has been considered advisable to close down the Lohse shaft section of the mine and concentrate all work on the sections served by the other three shafts until such time as the labour position will warrant resuming operations in this section. The number of natives now employed is equivalent to only 52·5 per cent. of the total underground complement, and normal profits cannot be expected until the supply has considerably improved.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

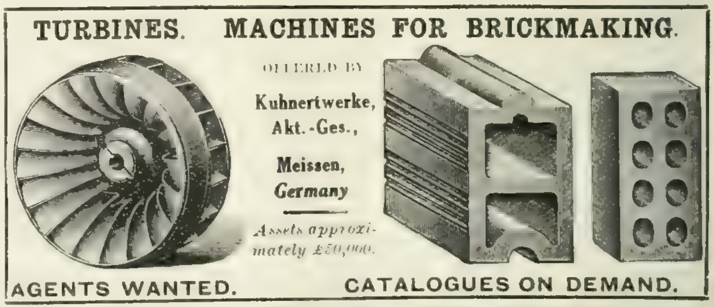
His Majesty's [illegible] Gilbert and Sullivan Opera Co.	[illegible]15
Standard Henry Herbert and Co. ...	See bills.
Empire Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand ...	7 to 11.15
Orpheum ...	7 to 11.15
Bijou ...	7 and 9

Contracts Open.

Tenders are invited by the end of December for the following: Erection of a New High School for Girls, Pretoria; erection of a Boarding-house at the New Girls' High School, Pretoria; erection of a school for 100 pupils and teachers' quarters at Morgenzon Township (alternative tenders wood and iron, brick-lined, and local brick); erection of a dispensary at the Johannesburg Hospital; erection of a kitchen at the Johannesburg Hospital; erection of a school for 64 pupils and teachers' quarters at Leeuwfontein No. 140 (alternative tenders in wood and iron, brick-lined, and local brick); additional accommodation for domestic science at Cleveland High School, Johannesburg; erection of caretaker's quarters at Girls' High School, Pretoria; drainage, etc., at the Government Cookery School, Schoeman Street, Pretoria; erection of a school for 100 pupils and teachers' quarters at Uitvlucht No. 63 (alternative tenders in wood and iron, brick-lined, and local brick); erection of a Jewish school for 600 pupils at Doornfontein, Johannesburg; erection of a school for 250 pupils at Van Ryn; erection of a fever hospital at Johannesburg; additions to the school building at Bloemhof.

INVESTORS' DIARY.

Jan. 23 Witbank Colliery.



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Finance, Commerce, and Industries.

Durban Electricity Supply.

The report of the Durban Electrical Engineer (Mr. John Roberts) for the year ending July 31 last, which marks the sixteenth completed year's working of the Durban Electrical Department, contains many facts and figures to bear out the activity of the department in meeting the steady growth of Durban and its ever-increasing public needs. The progress made during the year is indicated by the following figures, which give a comparison with those of last year:—

	1913.	1912.
No. of private consumers of electric light	5,756	5,223
No. of private consumers of electric power	353	308
No. of street lamps	2,450	2,292
No. of units sold	13,752,984	9,023,699
Total revenue	£95,583	£78,894

The number of units sold was as follows:—

	1913.	1912.
Private consumption (other than motive power)	2,085,208	1,725,944
Private motive power supply ...	2,522,764	1,457,324
Corporation departments, lighting and power	1,153,881	1,163,370
Street lighting	719,205	733,836
Tramways	3,704,540	3,389,712
Government supply	3,567,386	*553,513
Total	13,752,984	9,023,699

*2 months.

The increase in units sold is 52 per cent., the Government supply, of course, largely contributing to this satisfactory expansion of the business of the department. *Inter alia*, Mr. Roberts writes:—It might also be interesting if some comparisons were made between the Durban undertaking and those of English towns, and figures which show how we stand alongside towns turning out between ten and twenty million units per annum are given. It must, of course, be borne in mind that cost of construction for the same amount of plant is much heavier in this country, as is also the price of labour for maintenance, than in England. Comparing first the capital which we have invested with those towns in England, whose operations are on a similar scale to ours, I have extracted figures from the *Electrical Times* (an English journal) relating to all those towns whose output is between ten and twenty million units per annum, and as we should naturally expect that the capital should depend, to a great extent, upon the amount of electricity disposed of, I have shown in Table No. 6 the investment necessary in all those towns for the production of one unit per annum. The average amount is 11·44d., the corresponding figure in Durban 6½d. This would seem to confirm the fact that our capital, considering our output, is extremely modest, due to the large provision which has been made out of revenue, to keep our indebtedness low, and it is also confirmed by a comparison of the percentage of revenue to capital expenditure with the same towns, which is also shown in this table. It will be seen that the average gross revenue, as a percentage of the capital in England, is 14·89 per cent., whereas for Durban the corresponding figure is 25 per cent., not only higher than the average, but considerably higher than any other town, the next nearest being Nottingham, whose revenue is 20 per cent. of its capital. Turning now to the selling price of the unit, for there could be little credit taken for a high percentage of revenue to capital, if this could be explained by unduly high charges, a comparison is made with the same towns of the average price obtained for the unit, from all classes of supply, and these average prices secured by the same number of towns is given in the table, from which it appears that while in England 1·44d. is the average price per unit sold, in Durban the figure is 1·67d., or 16½ per cent. in excess, although it is lower than the corresponding prices in Brighton, Edinburgh and Nottingham. A comparison, further, of working costs is of interest. Though one would naturally expect that in South Africa, where labour is so much more expensive, and where coal is certainly not unduly cheap, the cost to us of turning out a unit of electricity would be far in excess of what is necessary in England, it is satisfactory to note that while the average cost in the towns enumerated is ·69d. per unit, the cost in Durban last year was ·745d., or a difference of 7¼ per cent. only, and that the cost is lower than in Nottingham, Brighton, Hull, and Edinburgh, being almost exactly the same as in Salford and in Bristol. All these figures would go to show that when the increased scale of expenses are taken into account, compared with the corresponding English figures, our results are greatly better than the average shown by stations of about the same output at Home.

* * * *

Building Plans Approved by Municipalities.

Nine municipalities in the Transvaal Province during the month of November approved plans having an estimated value of £101,013 as against £116,028 for the month of October, showing a decrease of £15,015. Ten municipalities in the Cape Province approved plans having an estimated value of £52,129. Durban Municipality passed plans having an estimated value of £44,765, and the Bloemfontein Municipality £8,415.

* * * *

African Ostrich Industry.

Professor Duerden, a learned authority on ostrich farming, has recently remarked that the demand for ostrich feathers has grown with the supply. There has never been an excess of feathers; every one produced has been sold. Notwithstanding the attempts of other countries to establish the industry, the whole of the ostrich feathers produced outside South Africa probably do not amount to 10 per cent. of the total supply. The Professor does not fear competition, holding that immediately prices fall below the present satisfactory level farmers will turn their attention to other stock, and up will go prices again with the scarcity of supply. In any case, South Africa with its cheap land and labour has nothing to fear from the competition of countries where the cost of farming is much higher.

East Rand Gold and Coal.

The directors of the East Rand Gold, Coal and Estate Company notify the declaration of a dividend (No. 4) of 5 per cent. (1s. per share) payable to shareholders registered on the 16th of January. The dividend will be paid on or about the 16th of March. The amount to be distributed is £2,500.

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Automobile Notes.

It is indeed significant of the trend of the times when in a paper like the *Daily Mail* may be seen an article headed "The Horse Must Go." In a recent issue such an article put forward a strong plea for the banishment of the animal on the ground that it is responsible for the litter which renders London streets dangerous to motor traffic.

* * * *

There appear to be strong indications that the scheme of the Automobile Association and the Motor Union for the sign-posting of the roads of the United Kingdom by voluntary contributions will be successful. It is stated that support is forthcoming from influential quarters.

* * * *

The popularity of the "one-man" hood was abundantly evidenced at the late show at Olympia. The lazy-tongs principle has been greatly developed and improved, and a striking example of its utility was shown in the exhibit of the Auster Co. This hood can be swung up from its folded position to full extension by one man, with one hand, with one movement, from almost any position inside or outside the car, and with very little exertion indeed. In like manner it may as easily be swung back and folded down when not required.

* * * *

An industrial city is being planned next door to Indianapolis, U.S.A., which is to be devoted to the interests of the motor-car trade, and in the streets of which, when finished, no horses will be allowed. The Mayor and other officers are to be recruited from among those engaged in the motor trade, and the streets, courts, avenues, and squares, will be named after famous car-makers. The new city will be named Speedway, and no factory will be allowed within its boundaries that is not in some way identified with the motor industry.

* * * *

It is claimed by the manufacturers that the luggage problem, as connected with the motor car, has been solved by the auto-trailer, which is intended to be attached to the rear of a car. The device has only one supporting wheel, with a castor action, which permits it to follow exactly in the track of the car. The wheel is so fixed that when the car is reversed it turns round under the platform just as a castor wheel will do, and takes exactly the same course as the car itself. The trailer is secured by quick-acting clips to hinge brackets fixed to the rear dumb irons.

* * * *

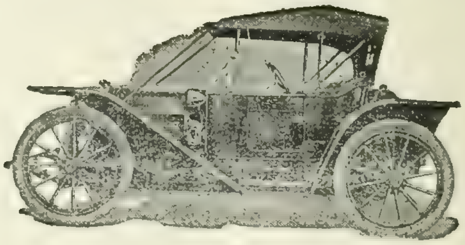
As an outcome of the recent conference held in London, the Imperial Motor Transport Council has been formed with the object of keeping the various portions of the Empire in touch with each other and the Mother Country in regard to all matter relating to motor transport. To this end periodical reports from information received from correspondents throughout the Empire will be published and circulated. In addition, expert committees will be formed to consider any special matters of importance to which the attention of the Council may be drawn, and future conferences will be organised when such appear advisable in the interests of manufacturers.

* * * *

At present the Council is forming an Alcohol Motor Fuel Committee in accordance with the request of the delegates at the recent conference. Investigations will be conducted, and experiments made, with regard to the use of alcohol as a motor fuel, the general opinion having been expressed that considerable support would be forthcoming from the Dominions and Colonies in aid of this work.

* * * *

Mr. Stuart Curzon, well known in connection with motor omnibus enterprises, has addressed a letter to the Royal Commission on Railways, in which he asks why the spending of thousands of millions sterling should be contemplated when something better than locomotives has been invented, and a greater traffic is rapidly taking shape. He challenges the Royal Commission to agree upon a given number of passengers to be conveyed over a given distance (*e.g.*, an average railway journey), and he will then undertake to convey these over the distance at a less cost per mile than the cost upon the present British Railways and at a superior speed.



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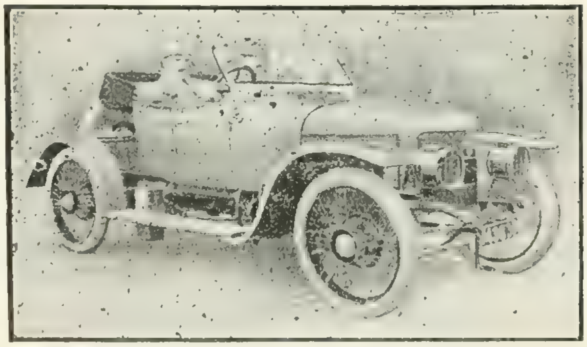

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Notes and News.

What is Impure Air? A revolutionary memoir on the subject of ventilation by Prof. Leonard Hill and associates has been published by the Smithsonian Institution. The main purpose is to show that the chemical quality of the air in crowded and stuffy places has nothing to do with its ill effects, and that, apart from the influence of infecting bacteria, the ventilation problem is essentially one of temperature, relative humidity, and movement of the air. Many fallacies are exposed in this memoir. It is shown that the belief that there is organic poison in expired air is erroneous. Nor does the concentration of oxygen play the large part it is supposed to. Copies of this work have not yet reached the Rand, but they promise from the brief reviews available to have a very practical bearing on Rand ventilation problems.

* * * *

New United Reefs (Sheba). The report of the New United Reefs (Sheba), Ltd., covers the 12 months from June 1, 1912, to May 31 last. In January last the De Kaap property, including the mining claims, water rights, machinery, plant, stores, etc., was submitted to public auction in Johannesburg, but the reserve fixed by the Board not being reached no sale was effected. Thereupon negotiations took place for the sale of the whole or part of the property, but without successful results. Efforts have been made continuously to find a buyer or tributor, but the Board regret that up to the present time no sale or letting has been effected. Renewed interest is, however, being taken in mining operations in the Barberton district, and the Government Inspector of Mines, who recently made a tour of inspection, held out encouraging hopes of the prospects of successful mining in that locality.

* * * *

Kamfersdam Mines. In the report of the Kamfersdam Mines for the year ended June 30 it is stated that the work done during the year has been principally the removal of fallen ground to clear the working faces, and a start has been made to deposit blue ground on the floors. The lower strata of the fallen ground mixed with reef which had pulverised and was in a condition fit for washing, and was therefore sent to the machines. The yield of diamonds for the twelve months from this and a small amount of pulsator tailings, also washed, was over £15,000 in value. Various alterations, additions, and improvements have been made in the machinery and plant. The mine incline cutting is also being continued, and various alterations and additions have been made to the mine compound buildings.

* * * *

United African Lands. The report of the United African Lands, Ltd., for the year ended September 30 last states that during the period under review two isolated farms in the Middelburg district—namely, Tweefontein and Boschfontein—have been sold; the farm Tweefontein realised £1 17s. 6d. per morgen. Boschfontein was sold for £1 5s. per morgen. The company retains the mineral rights of both farms. Negotiations are proceeding for the sale of further areas of land.

* * * *

Johannesburg Gold Fields. The report of the Johannesburg Gold Fields, Ltd., covering the year ended September 30 last, states that the gross revenue received from dividends and interest, rents, and transfer fees, amounted to £4,099, which, after deducting therefrom expenditure amounting to £734, leaves a net profit for the 12 months of £3,365, as compared with £3,004 for the previous year. The balance sheet shows cash £12,239 and sundry debtors £300, against creditors for £25. Shares and debentures in other companies (at cost) figure for £142,387; the value at published prices on September 30 last was £50,699.

African Gold Recovery.

In presenting their report for the year ended June 30 last the directors of the African Gold Recovery Company, Ltd., draw attention to a circular from the Delmas Estate and Colliery Company, Ltd., inasmuch as it seems to imply such a deficiency in the coal assumed to be available as to render this company's shareholding of comparatively little value. The prospecting shaft put down in 1895 and the recently made incline working shaft both disclosed a body of fine coal, amply justifying sanguine expectations. The diagrams of bores put down in 1895-6 and the horizontal surface of the ground were so consistent that the sudden rise of the dolomite base cutting out the coal came upon the engineers as a surprise, and has now led them to advise the present abandonment of the colliery work. A quantity of good coal not yet measured up remains available as an attraction for local industries at and near the township. Two of the company's farms have been inspected by a land expert with eminently satisfactory results.

* * * *

A New Geological Map.

We have received from the Geological Survey a copy of a new map accompanied by a supplement to the explanation of Sheet No. 2 (Pienaars River). The map includes the greater portion of the area situated in the Bushveld to the north and north-west of Pretoria, and published in 1907 as Sheet No. 2 (Pienaars River). With the issue of the present sheet, however, the original Sheet No. 2 is now brought into line with the new series of maps, bounded by meridians and parallels, which were commenced in 1911 with Sheet No. 7 (Potgietersrust). Owing to the necessary slight shifting towards the west in the position of the new map, consequent upon the arrangement of the new series, there is thus a slight difference in the area now included, as compared with the earlier production, a new belt of country appearing along the western margin of the sheet, and including an area of approximately 560 square miles. A narrow strip also appears along the southern margin, which was originally included in Sheet No. 1 (Pretoria). While, however, a further area is added on the west, a narrow belt is at the same time cut off on the east by the 28° 30′ meridian, which marks the eastern boundary of the map. The western portion of the map was surveyed in 1906 and 1908 by Dr. W. A. Humphrey, and the principal object of the present supplement to the sheet explanation is to describe the formations, mainly belonging to the Transvaal System, which now constitute an additional feature of this portion of the area. The more eastery outcrops of these rocks, as developed a few miles east of the junction of the Aapies and the Sand Rivers, have now been recognised as belonging to the Rooiberg Series of the Lower Waterberg System.

* * * *

Middelburg Steam Coal and Coke.

During the year to June 30, 1913, the Middelburg Steam Coal and Coke Company produced 294,375 tons of coal, or 31,235 tons more than in the previous year. The colliery profit was £19,740, and the company's net profit for the year £16,159. Out of this the preference dividend of 5 per cent. and an interim dividend on the ordinary of 3¾ per cent. have been paid, absorbing £6,786. The directors now propose to place £2,500 to reserve and £3,000 to share reserve, and to pay a final dividend of 3¾ per cent. on the ordinary, making 7½ per cent. for the year, leaving a balance of £16,671 to carry forward against £16,340 brought in. Last year 5 per cent. was paid, and it seems that but for the scarcity of railway trucks the improvement in the company's business would have been greater. In addition to the colliery business the company is interested, through its holdings in and advances to the Transvaal Gold Trust, in gold properties at Pilgrim's Rest. A complete treatment plant has been installed on this property, and is now running on low-grade development ore. Mr. Goodwin, the general manager of the Middelburg company, thinks this gold property may be taken as an 8-dwt. proposition, and with the present equipment may yield a profit of £500 per month.

Seymour Memorial Library.

Dr. Geo. S. Corstorphine, Chairman, Seymour Library Committee, on December 15, writes as follows: Sir,—As reported in your columns, Mr. Andrew Crosse complained, at the meeting of the Chemical, Metallurgical and Mining Society recently, that the Seymour Library was "antiquated." Fortunately, Mr. H. A. White was present and able to correct Mr. Crosse's impression. For the sake of the general public, however, I may say that the Library contains the following recent literature on acetylene, namely, an article by Professor Vivian B. Lewes extending to eight columns in the Encyclopaedia Britannica, 1910, and another by the same authority extending to 19 columns in Thorpe's Dictionary of Applied Chemistry, 1912, these being the most recent articles, outside of serial publications, of which the Library Committee is aware. Mr. Crosse did not come to the Library himself, and the Librarian informs me that the only recent enquirer on the subject of acetylene was a young man of probably 22, who brought a card from Crosse, but gave no indication that the information was wanted for research or that it was being asked for on behalf of a professional chemist, and the book given to this young man contains quite enough information for any ordinary enquirer. A trained chemist may, of course, be expected to look up the serial literature of his subject, and not mere text-books. Further, I may say that the Book Committee of the Library is always ready to receive suggestions from anyone interested, and if Mr. Crosse, or any other gentleman interested in scientific literature, will but enter his suggestions in the book for the purpose, or on one of the cards which the Librarian is always ready to supply, he may rest assured that full consideration will be given to every request.

* * * *

The Minimum Wage.

On the subject of the Coal Mines (Minimum Wage) Act, which was passed under notorious circumstances in 1912, the *Colliery Guardian* makes some interesting comment. The Act contains a provision, distinguishing it from other industrial enactments, that it shall continue in force for three years and no longer, unless Parliament shall otherwise determine. This means that on March 29, 1915, the Act automatically comes to an end. There is a further provision, however, that after one year has elapsed since the rate or rules were last settled by the district boards, on an application made (with three months' notice given after the expiration of the year) by considerable sections of the workmen or employers, the existing rate or rules may be varied. It thus falls that in several districts such applications have been made, a year having now passed since the original awards were issued, and trouble is brewing. Whether the miners will succeed in approaching the Prime Minister, and what action the Miners' Federation of Great Britain may determine upon, we cannot say; the trouble over this makeshift Act has come rather earlier than we expected. The miners are only now learning a fact that was not obscure at the outset—namely, that the tendency of a legal *minimum* is to bring the wage rate to that *minimum*. Otherwise, if the minimum is to be the subject of perpetual negotiation, we must either revert to the *status ante quo* or introduce the abhorrent principle of compulsory arbitration. These incidents form a striking commentary upon Sir George Askwith's declaration the other day that, "where terms might bear two interpretations, a means of impartial interpretation should be found." Lord Mersey, whom Mr. Straker, the Northumberland miners' secretary, now speaks of as the "so-called" chairman, was accepted by the men when the Board was formed; it is only in the light of his subsequent awards that his impartiality has been impeached. We think that it will be found that "impartial interpretations" satisfactory to the rank and file are only obtainable from those who, like some of the high court judges in Australia and New Zealand, take a complacent and generous view of the labour standpoint. In every case, we believe, the workmen will find that agreements arrived at by methods of conciliation are more lasting and beneficial than awards secured by the intervention of third parties."

TOPICS OF THE WEEK.

PROPOSED NEW INDUSTRIAL LEGISLATION.

In the new legislative programme represented by the batch of five bills published last week, obviously two are of the first importance. The Trades Unions Bill is a serious attempt to meet the wishes of the Trades Hall in regard to the recognition of these combinations of labour; and the Industrial Disputes Prevention Bill, as its name implies, is an attempt to extend further and improve upon the similar Act now existing in the Transvaal. To take the latter Bill first, it may be said at once that it is by far the more satisfactory of the two. In several respects it is an improvement on the existing Act, and short of adopting what English Trade Unions call the "obnoxious principle of compulsion," it makes it incumbent on both sides in a dispute to do almost everything to prevent a strike, and to insist upon the due observance of agreements, once entered upon. The critics of the Bill will, doubtless, mainly be found among those who favour the compulsory or Australian method of prohibiting strikes in contrast with the English or voluntary principle, and the Canadian, or middle course. These critics aver that nothing short of compulsory measures will ever stop strikes, and they point to the comparative success of Australian legislation of this sort in support of their arguments. The Minister of Mines and his advisers, on the other hand, as he himself stated at the recent Chemical, Metallurgical and Mining dinner, does not expect altogether to stop strikes, but hopes by these means to reduce their frequency to a minimum. In view of the now notorious fact that not the inadequacy of the existing Act but the failure properly to administer it was responsible for the recent trouble, we are inclined to welcome the new Bill as going as far as is apparently politic and necessary at present in the direction of compulsion. Flaws in the details of the Bill there certainly are, and without attempting on this occasion an exhaustive analysis of all the provisions, one or two questionable ones may be indicated. Of these, perhaps, the fact that election of the men's representatives to the Conciliation Boards is not *necessarily* by ballot seems the most serious. Here, obviously, a way is left open for abuse, and efforts should be made to amend it in this particular by all anxious to see the measure successful. On the other hand, the Trades Union Bill reveals itself, on the most cursory examination, as sadly wanting both in principle and detail. It has already been greeted with a chorus of criticism from all quarters, save perhaps the South African Labour Party and the Trades Hall. Thus the recognition of the Federation of Trades Unions as a Trades Union may or may not be politic—it is plainly rather illogical, and fraught with great possibilities of abuse. Nor are proper limitations laid down in regard to the numerical strength of a Trades Union that may presume to speak and act for the employees of a whole industry. And while we are less concerned with the political side of the objection that Trade Union funds may, without let or hindrance under the Bill, be used for political party purposes, in the interests of pure industrial freedom, this seems an arbitrary interference with the political rights of minorities within Trades Unions. The British Trades Unions Act of 1912 provides a ready and convenient precedent for dealing with this undoubtedly difficult question; and there seems no earthly reason why such a principle of tried use and worth should not be embodied in the present measure. It is satisfactory to find that the freedom of non-unionists is expressly provided, and intimidation or unwarrantable interference with them is to be attended with due penalties. These remarks are to be construed neither as a summary of the chief provisions of both Bills nor as covering all the points of possible criticism. A full summary of both Bills is printed elsewhere in this issue, and the far-reaching importance of the measures makes it necessary and desirable that they should be dealt with more fully on another occasion.

NEW INQUESTS, FACTORIES, AND PUBLIC MEETINGS BILLS.

Three of the five Bills published last week deal respectively with inquests, factories and public meetings. The last-named merely improves and modernizes the legal machinery necessary to prevent public meetings likely to lead to disorder, and has of course everything to commend it. The Inquests Bill aims to carry out the intention of the Government to re-introduce, with certain limitations, the procedure followed under the Inquests Proclamation of 1901, which was one of the first enactments in the Transvaal during the war. This was founded on the Act which had been—and still is—in force in the Cape Colony for the best part of half a century. The main difference between the Bill and the Proclamation which used to be in force here lies in the fact that in the new measure the cases in which an inquest is required are, very rightly, more restricted. The Proclamation laid it down that an inquest must be held in every case in which a person had died suddenly; the requirement is now narrowed down to when "any person has died from violence or otherwise than from natural causes, or is supposed, or is suspected to have so died." In such events the Magistrate, within six miles of his court-house, and outside that radius a Justice of the Peace or fieldcornet, is directed to hold an inquest and take a full record of the circumstances surrounding the death, as was the case under the Proclamation, and is the rule under the Cape law. The addition which has been made, laying it down that in mine cases the magistrate may sit jointly with the Inspector of Mines and report separately if he so desires, seems, for several reasons, a sound one. In detail the Bill will doubtless be improved during its progress through Parliament, but with the general principle of re-introducing inquests no one will quarrel. A larger and more contentious measure than either is the Factories Bill, which has been in course of preparation for a considerable time. The Bill appears to have been drafted not so much to meet conditions which exist within the Union as to prevent undesirable conditions which, without such a measure, might gradually come into being with the development of industrialism. Six years ago the Jameson Government at the Cape drafted a Factory Bill, upon which a Select Committee of the Cape House of Assembly took evidence and drew up a report. The general tenour of the evidence taken in 1907 was to show that the conditions of factories then existing in the Cape were on the whole satisfactory. There were, it is true, various allegations made as to sweating in the tailoring and clothing trades in Capetown, but these were subsequently challenged by the firms concerned, who had not been given the opportunity of producing rebutting evidence. Whether conditions in the Transvaal to-day are similar we have no evidence to show. We have no doubt that the owners of factories would on the whole be prepared to welcome a Factories Act which will compel, throughout and trade or industry, the provision of adequate ventilation, proper sanitation, and sufficient air space for employees. Until the details of the Bill have been examined by the several trades and industries concerned, it would be futile to attempt exhaustive analysis. An important sub-section lays down the principle that if a special arrangement exists between a factory owner and his employees, or a Trade Union, restricting the hours of work to less than 50, the lesser number of hours "shall, in respect of that trade or occupation, and so long as the agreement continues to be in force," be construed as being the hours prescribed by law. If this clause means what it says, it would appear that a Trade Union would have no difficulty in reducing the number of hours in any particular trade by the expedient of establishing a little factory of its own at which an unreasonably short working day would be agreed upon, and thereupon extended throughout the trade in question. The general principle of the conditions regulating the hours of female employment will be approved by the public, and like the conditions governing juvenile labour, seem to have been adapted from English legislation. The general question of hours of labour is, however, so largely governed by the conditions ruling in particular trades that it will be very necessary for the Legislature to be placed in possession of expert evidence before committing itself to any endorsement of the proposals in the Bill. The tendency of the measure is undoubtedly sound, and expert assistance has doubtless been invoked in its drafting. It will be interesting to have the views of the various industries regarding the incidence of the measure on their several activities, but a little time will be necessary before these can be collected. In the main, all three Bills may be said to be sound in principle and only requiring the purifying and improving processes of Parliament to become valuable additions to our statute book.

TRADE UNIONS BILL.

Registration and Management —Punishment for Intimidation.

A Bill to provide for the registration, regulation and management of trade unions is published in a "Gazette Extraordinary." Introductory clauses state that a trade union shall be regarded as any society consisting of not less than two persons in the case of employers, or not less than seven persons in the case of employees lawfully associated for the purpose of protecting or furthering the interests of such employers or of such employees in the same trade, business or undertaking, but shall not include a society of persons in the employment of the Crown or of the Government of the Union, or any department thereof. A federation or association of trade unions shall also be regraded as a trade union. The laws which govern (a) the incorporation, registration and winding up of companies; (b) life insurance companies; or (c) the formation, registration and management of friendly societies or provident societies, shall not apply to any trade union, and no trade union shall hereafter be registered under any such law. Chapter I. provides for registration. There is to be a registrar, who shall be an officer of the public service. He is to frame annually a list of trade unions with certain particulars for submission to Parliament. Any two or more officers of a trade union can register the body under the provisions of the Act. The following particulars must be furnished: (a) The name of the trade union; (b) the names of the officers of the trade union and their respective designations, and of the executive committee; (c) the address of the head office of the trade union; (d) copies of the rules of the trade union setting forth the objects for which the union has been established, the several purposes for which any of its funds are to be applicable, the conditions under which any member may become entitled to any benefit from any of those funds and subscriptions which are to be paid by, and the fines, levies and forfeitures which may be imposed on any member of the union. If any of the purposes of a trade union as disclosed by the rules transmitted to the registrar, or any of the matters for which provision is made in the rules as transmitted to the registrar, be contrary to the criminal law or repugnant to or inconsistent with this Act or any law for preventing industrial disputes or any other statute, the registrar shall not register that union, but shall forthwith give notice in writing to the officers who applied for the registration that he withholds the registration until the rules are brought into conformity with this Act and any such law. The registrar shall specify in such notice the rules to which he takes objection and the grounds of the objection, and the trade union may apply to any provincial division of the Supreme Court having jurisdiction in the Province where its head office is situate for an order declaring that the registrar's objections are not value in law and that he shall register the union. The Provincial Division may make such order on the application as it deems just. No trade union shall have a name identical with that of another union. Certificates of registration will be issued as branches may be registered as separate unions. A name cannot be changed without the consent of not less than two-thirds of the total number of members. Every proposed alteration of rules must be lodged with the registrar, and shall not have effect until it has been so lodged. Provision is also made for the registration of changes and amalgamation

CANCELLATION.

A certificate of registration of a trade union may be withdrawn and cancelled by the registrar at the request of the trade union, evidenced in such manner as the registrar directs, or if the registrar is satisfied: (a) That the registration has been obtained by false information as to any of the particulars which under this Act have to be transmitted for the purpose of registration; or (b) that the trade union is pursuing objects or a course of conduct not authorised by its rules; or (c) that the trade union has, by a ballot or by any resolution of a general meeting, at which two-thirds of the members voted therefor, authorised any act which is in contravention of the law for the prevention of industrial disputes: Provided that one month before withdrawing and cancelling the certificate on the grounds mentioned in paragraphs (a), (b) and (c), the registrar shall give notice in writing to the union, specifying the grounds on which he proposes to withdraw and cancel the certificate. During that period of one month the said Union may satisfy the registrar that the acts specified as grounds of withdrawal and cancellation were inadvertent, or that, though not inadvertent, they will not be repeated, or it may apply to the Provincial Division having jurisdiction for an order restraining the registrar from withdrawing and cancelling the certificate, and the Provincial Division may make such order on the application as it deems just. A trade union whose certificate of registration has been withdrawn and cancelled shall, as from the date of the withdrawal and cancellation, cease to enjoy the privileges of a registered trade union or any of its members from any liabilities which it may have incurred or may thereafter incur under this Act or any other law. Any such liabilities may be enforced as if the withdrawal and cancellation had not taken place. The rules of a registered trade union must provide for the manner and circumstances in which it may be dissolved.

REGULATION AND MANAGEMENT.

Chapter II. deals with regulation and management. There must be a registered office; if any registered trade union is in default for more than seven days in having such an office, such trade union and every officer thereof shall be liable to a fine not exceeding £5 for every day during which the default continues. The acquisition of property and the disposal of the same is provided for. All property whatsoever, movable or immovable, belonging to any registered trade union shall be vested in and be under the control of the executive committee, but for the use and benefit of the union and the members thereof, subject always to the provisions of this Act. Any such property, for the ownership or holding whereof registration in any deeds or other registration office in which any such property is registered. In all legal proceedings, civil or criminal, before any Court touching or concerning any such property, it shall be sufficient to state that such property is the property of the executive committee of the trade union, without setting forth the names of the members of such committee or any further description of such members. Actions may be brought by or against the executive committee, and service shall be at the registered office The assets or funds of a registered trade union shall not be attached or subjected to any form of execution under a judgment or order of court of law in legal proceedings against an officer or member of the union, unless such union has, by ballot or resolution, taken in accordance with its rules, authorised, ordered or accepted responsibility for the act in respect of which those legal proceedings have been instituted. Save as in this Act or any other law or in the rules is specially provided, the executive committee and any officer of a registered trade union shall not be liable to make good any deficiency which may arise or happen in the funds of such trade union, but shall be liable only for the moneys which shall be actually received by it or him on account of the trade union. Provision is also made for the rendering and auditing of the accounts of trade unions and the punishment of defaulting officials. A general statement of funds, etc., must be transmitted to the registrar not later than the last day of February in each year. A copy of the rules of a registered trade union shall be transmitted or delivered by the trade union to every person other than a member, on demand, on payment of a sum not exceeding two shillings and sixpence, and subject to anything to the contrary in the rules prescribing a charge, to every member free of charge.

INTIMIDATION, Etc.

Any person who, with a view to persuading or compelling any other person to join any trade union, whether or not such union is a registered trade union: (a) threatens or suggests the use of violence towards or restraint upon such other person or any of his relatives or dependants or threatens or suggests any injury to his or their property; or (b) uses undue influence towards any such other person or any of his relatives or dependants; or (c) hides any tools, clothes or other property owned or used by such other person or any of his relatives or dependants or deprives him or them thereof, or hinders him or them in the use thereof; or (d) accompanied by two or more persons follows such other person or any of his relatives or dependents in or through any street or road or public place, behaving towards him or them in a disorderly manner or interferes with such other person or any of his relatives or dependants at his or their work; shall be guilty of an offence and liable on conviction to a fine not exceeding fifty pounds. Whenever any fine has been imposed under this Act for an offence, and the person convicted thereof does not forthwith pay the same, the court imposing the fine may, without prejudice to the issue of any process that may be lawfully issued for levying the fine by seizure and sale of the movable property belonging to that person, order his imprisonment, with or without hard labour, as such court may determine, for a period: (a) not exceeding seven days if the fine imposed does not exceed one pound; (b) not exceeding fourteen days if the fine imposed does not exceed five pounds; (c) not exceeding one month if the fine imposed does not exceed twenty pounds; (d) not exceeding three months if the fine imposed does not exceed fifty pounds; (e) not exceeding six months if the fine imposed exceed fifty pounds; unless the fine be sooner paid; and in the case of a fine for a continuing offence the court may order imprisonment for a period corresponding with the aggregate of so much of the fine as is unpaid.

THE INDUSTRIAL YEAR ON THE RAND.

A Review of 1913 on the Main Reef Series—The Strike the Outstanding Feature—Stability and Great Recuperative Powers of the Industry Amply Demonstrated.

THE year brought to a close during this week has been one of great tribulation for the gold mining industry of the Witwatersrand. Never in the whole history of these fields have twelve months been fraught with greater difficulty; never has a year called for so much strenuous endeavour. And at the close of 1913, whilst we may deplore the ill-considered actions that have made the year such a notoriously troublous period the Rand is surely entitled to regard with pride the fact that, thanks to the inherent soundness and great recuperative powers of the industry the dividend aggregate is greater than that for 1912, although the tonnage milled shows a substantial decline as between the months of January and November.

THE DOMINANT FEATURE OF THE YEAR.

All other events in the history of the year's mining in the Union have, of course, been thrown into comparative insignificance by the strike of miners on the Witwatersrand in the middle of the year. It is not here intended to revert to a lengthy discussion of the events that led up to this industrial catastrophe or the consequences attending the strike. Suffice it to say that on account of the Government's very necessary action in suspending recruiting operations until the Rand area again assumed a tranquil aspect, and because of the effect of the dislocation of the industry on the native mind the mines have lost 50,000 natives since June last. This wastage has been felt by the whole Reef, but particularly by certain of the lower grade large deep levels which had a difficult position to face before the strike. The Jupiter mine has been closed down mainly as a result of the contraction in the supply of native labour and the depressed condition of the market, to which of course the strike has greatly contributed. The Treasury, too, had its limited life brought to an abrupt termination by the strike. A further consequence has been the enactment of new legislation resulting from the negotiations between the Government, the Chamber of Mines and the Labour leaders. Two important "concessions" have been the payment of wages weekly instead of monthly as heretofore, and the undertaking of the mines to limit the time occupied in sending men down to their work and raising them to surface again. Many new and amended regulations have come into force with a view to reducing accidents and improving the health conditions of the mines. Whilst the spirit prompting the enactment of these new laws is, generally speaking, praiseworthy, it appears that many of the new and amended regulations are inoperative and that by reason of the very ultra-preciseness of the letter of the law the new legislation will tend to cripple initiative and common sense and defeat its own object. The end of the year brings forth further legislation vitally affecting the mining industry in regard to settlement of industrial disputes and the constitution of Trades Unions. This is referred to elsewhere in this issue.

HEALTH AND SAFETY.

Reverting for a moment to the subject of accidents, attention may be directed to the "safety first" campaign now being so vigorously prosecuted by the mines. The instigators of the crusade against the loss of life and limb, which is a distressingly observable feature of mining operations on the Main Reef series, believe that the first essential to a diminution of the accident rate is the educating of workers up to a proper and fitting sense of the dangers that continually beset them and how best those dangers may be avoided. There can be no doubt that this method will bear better fruit than the wearisome wealth of legislation which the Government has recently brought into force. Health conditions in the mines have unquestionably improved, and to-day it can be truthfully stated that in the average working place on the Main Reef series the risk of contracting phthisis is no greater, probably not so great, as in the majority of the mining fields of the world, always provided that the miner takes all reasonable precautions and makes use of the many devices designed and provided to allay dust and purify the mine air. As instances of the whole-hearted efforts of the mining Houses to improve health conditions in and on the Rand mines, mention may be made of two highly important events during the past year—the sinking of new circular ventilation shafts at the Crown Mines and City Deep and the arrival of Colonel Gorgas, the eminent Panama Canal health expert, and his assistants, whose mission is to enquire into health conditions on the Witwatersrand and to advise the leaders of the industry as to what additional steps should be or can be taken to further better conditions. Sir Almroth Wright's investigations have already borne excellent results in regard to the decrease of pneumonia amongst "tropical" natives by means of vaccine treatment, and one is certainly entitled to hope that at least as beneficial results will attend the stay of Colonel Gorgas, Major Noble and Dr. Darling in our midst.

THE YEAR'S WORK IN FIGURES.

In order to set out the salient figures relative to gold mining in the Transvaal we hereunder give a table of tonnages milled, stamps working, outputs, costs and profits for all the gold mines of the Transvaal Province month by month, from January to November; the latest period for which output statistics are available.

	Ore. Tons Milled.	Stamps at Work	Tube Mills at Work	Output Total Value.	Total Yield per per Ton Milled.		Total Working Costs.	Working Costs per ton milled.		Total Working Profit.	Working Profit per ton milled	
				£	s.	d.	£	s.	d.	£	s.	d.
January	2,347,929	10,009	286	3,353,116	27	11	2,121,481	18	2	1,153,728	9	10
February	2,146,085	9,928	285	3,118,352	28	2	1,962,997	18	4	1,057,196	9	11
March	2,373,273	9,987	285	3,358,050	27	7	2,099,146	17	9	1,162,385	9	10
April	2,356,204	10,046	285	3,334,358	27	8	2,113,789	18	0	1,140,192	9	8
May	2,425,333	10,102	290	3,373,998	27	3	2,139,861	17	9	1,141,202	9	5
June	2,234,368	9,922	283	3,173,382	27	9	1,978,817	17	9	1,107,563	9	11
July	1,931,327	10,015	287	2,783,917	27	8	1,857,779	19	5	828,477	8	8
August	2,217,390	9,952	293	3,092,754	27	4	1,957,615	17	9	1,069,747	9	8
September ...	2,087,981	9,874	291	2,999,686	28	0	1,967,878	18	0	1,039,280	10	0
October	2,127,085	9,729	286	3,051,701	27	9	1,896,364	17	11	1,035,974	9	9
November ...	2,006,507	9,665	288	2,860,788	27	9	1,807,180	18	1	970,623	9	8

The duty per stamp per day, which was 7·92 tons at the beginning of 1912 and 8·69 tons at the beginning of 1913, remained at the same figure, 8·69 tons at the end of the year. These figures include not only those for the Rand but those of the Lydenburg, Barberton, Klerksdorp and Heidelberg districts as well. The Rand, of course, contributes by far and away the lion's share of the total, and the monthly fluctuations in the output, etc., reflected in the above may be taken as representative of the Rand as a whole, the returns of the outside districts remaining fairly constant at from £120,000 to £130,000 per month.

LABOUR-SAVING PROJECTS.

The difficulties met with during the year in regard to labour shortage have compelled the mining Houses to exert every means possible to keep mills running and labour-saving devices have been employed to the utmost practicable possibility. There has been a large accession in mechanically operated shutes and in small rock drills easily worked in stopes. The end of the year finds mining men paying greater heed to rock drills than probably at any other time in the history of the industry. Excellent results are now being secured by two makes of drills only recently placed on the market, and it is probable that the New Year will witness further important developments in this direction. Closer attention has, too, been paid to the delivery of the air to the machine drills, to the laying of tracks underground, and to many other details of mining practice. The stress of circumstances has demanded a general stocktaking of all branches in which economy and labour saving is practicable in the industry, and in this way even such a disastrous business as the strike may in time bear good fruit.

ENGINEERING AND METALLURGY.

Above surface there have been few developments calling for much remark. The electrification of the industry has advanced a stage further, the Victoria Falls and Transvaal Power Company having brought its new Rosherville station into active commission during the year. Numerous improvements in Metallurgy have been introduced, but no very epoch-making innovations have to be noted, and general crushing and treatment practice remains the same as at the beginning of the year. The fine equipment of the Van Ryn Deep marks the last word in metallurgy up to this date, and it is worthy of remark that the installation for the Government Gold Mining Areas on Modderfontein, which should be working in twelve months' time, will be of very much the same design.

DEVELOPMENT AND ORE RESERVES.

Development operations like those concerned with actual production were much hampered and impeded about the middle of the year by the strike, but despite this ore reserves have not been encroached on, taking the Rand as a whole, and it is probable that there are to-day if anything a few more tons standing actually developed in the mines than at the end of last year, when a grand aggregate of 110,000,000 tons was arrived at. As in other years development in some areas and in certain mines has been attended with most excellent disclosures, whereas in other areas and other mines the assays and widths have been poor and disappointing. The Cinderella Consolidated and Jupiter, for instance, have closed down partially on account of the stringency prevailing in the money market and the scarcity of labour and partly on account of the poor developments secured in these properties. On the other hand there may be chronicled the fine development disclosures in that most promising deep level of the Further East Rand area, the Van Ryn Deep, and the continuance of excellent values in the New Modderfontein and Modderfontein B. mines. The year's work, it appears to us, has in no way strengthened the evidence of those who adhere to the deterioration of values in depth theory, but rather seems further to have indicated the applicability of the "blotting paper" theory of sporadic distribution to the banket beds. The three large amalgamations, Crown Mines, Randfontein Central and East Rand Proprietary, have earned profits very much in keeping with those of the preceding year and have, we should judge, quite maintained their development positions despite the large handicap of labour shortage, which naturally is felt most severely by large concerns such as these.

AMALGAMATION REDIVIVUS.

During the year no further amalgamation schemes were brought to a conclusion, but in the last month definite pronouncements as to two projects which have been known to be pending for some time have been made—we refer to the Crown Mines—Robinson fusion and the amalgamation of the New Kleinfontein, Apex and Benoni Mines. Both these schemes should tend to greater stability of operation in the areas mentioned.

A STUDY IN SHARE PRICES.

If the share market be regarded as representative of the fortunes of the Rand during the past year the impression must be gained that 1913 was a black and unsatisfactory period. Examination of comparative prices at the end of December, 1912, and the end of December, 1913, shows a large depreciation in practically every stock. In Brakpans, for instance, there has been a decline from 82s. to 49s., in Consolidated Gold Fields from 63s. 9d. to 41s. 3d., in Rand Mines from 130s. to 114s. 6d., in East Rands from 56s. 3d. to 40s. 6d., and in Main Reef Wests from 19s. to 6s. 6d. The only two advances of note to be recorded are in two Barnato stocks—Van Ryn Deeps having risen to 36s. 6d. from 19s. 6d. and Witwatersrands to 72s. 6d. from 62s. 6d. In a number of instances the declines recorded are, we are inclined to think, much larger than are warranted by the conditions actually prevailing in the mines concerned. Pessimism has, in fact, had a very long and tedious innings in 1913. With an improvement in the native labour supply there would appear to be sound justification for anticipating that the New Year will witness some measure of a return of confidence in this, the greatest gold field of the world. The strong positions of most of the mines in regard to administration, finances, equipment and developed ore all stand as guarantees that such a revival of interest in the Main Reef gold mines would not be in any way belied.

Pilandsberg Diamonds.

The annual meeting of the Pilandsberg Diamond and Minerals, Ltd., was held last week. Mr. J. Dale Lace presided, and 15,332 shares were represented out of an issue of 24,625. In moving the adoption of the report and balance sheet, the Chairman referred to the fact that these had been in the hands of the shareholders for several days previously. He then detailed the circumstances connected with the Salt Petrepan property, and detailed the work that had been done thereon. Proceeding, he stated: "We have opened up a mine, we have had our test washing, the result of which was publicly announced at the time, and the diamonds recovered were shown to you. I am satisfied those results were bona fide, and only went to confirm the knowledge we had required, previous to our acquiring the property from many sources. Being thus satisfied, we proceeded immediately to acquire a plant and open your mine for practical mining. That plant is mostly now on the mine, and its erection is being proceeded with with the utmost despatch. From information now before me the whole of the complete plant will be at the mine to-day at latest. The plant consists of a twelve-foot pan, capable of treating, say, 250 loads per diem, with elevators, cylinders, with engine and boiler, capable of producing up to 30 h.p., thereby giving us a considerable margin of power for future extension, the necessary haulage capable of hauling up to one thousand loads a day, with necessary pumping plant—a very complete gear taking it as a whole." At the present time the plant is being rapidly erected and there is every reason to anticipate that the middle of January will see it in working order. As regards the development, the central mine has already been stripped to the extent of some fifteen claims, and the work as proceeding discloses distinct evidence of extension of the mine in the direction of the pan. How far that extension may go it is at present impossible to say, but this in time will be proved by the rapid development that is now going on. It is noticeable from the balance sheet that at the 25th November there was in cash £3,365 14s. 8d., with 2,075 reserve shares, which have since been taken up. This, with subsequent share issue, has placed the company in a thoroughly sound financial position, enabling it to carry out its purpose.

East Rand Gold and Coal Dividend.

The directors of the East Rand Gold, Coal and Estate Company notify the declaration of a dividend (No. 4) of 5 per cent. (1½d. per share, not 1s. as erroneously stated last week) payable to shareholders registered on the 16th of January. The dividend will be paid on or about the 16th of March. The amount to be distributed is £2,500, and the capital is 400,000 shares of 2s. 6d. fully paid (not £1 shares).

THE YEAR'S DIVIDENDS.

Declarations of Transvaal Gold, Coal, Tin and Diamond Mines for the Year—Rand Shows a Quarter of a Million Increase.

HEREUNDER we give a table setting forth the dividends declared by Transvaal mining companies for the current year. The dividends declared by Rand gold mining companies for 1913 amount to £8,194,096, which represents an increase for the year of practically a quarter of a million sterling.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount.	Total Distribution for Year.	Amount Half Year, June, 1912.	Amount Half Year, Dec., 1912.
THE RAND.								
CENTRAL MINING AND INVESTMENT CORPORATION.								
Bantjes Consolidated ...	£502,306	June	5	1s.	£25,115	£37,672	£25,115	£31,369
	502,306	Dec.	2½	6d.	12,557			
City Deep	1,250,000	June	10	2s.	125,000	218,750	—	156,250
	1,250,000	Dec.	7½	1s. 6d.	93,750			
Crown Mines	940,106	June	55	5s. 6d.A	517,058	1,034,116	517,058	517,058
	940,106	Dec.	55	5s. 6d.	517,058			
Durban Roodepoort Deep..	440,000	June	5	1s.	22,000	22,000	22,000	22,000
Ferreira Deep	980,000	March	25	5s.	245,000	490,000	182,000	220,500
	980,000	Sept.	25	5s.	245,000			
Geldenhuis Deep	585,753	June	10	2s.	58,575	102,507	58,575	29,287
	585,753	Dec.	7½	1s. 6d.	43,932			
New Modder	1,400,000	June	15	12s.B	210,000	420,000	175,000	210,000
	1,400,000	Dec.	15	12s.	210,000			
Nourse Mines	827,821	Jan.	10	2s.	82,782	234,549	82,782	41,391
	827,821	June	10	2s.C	68,985			
	827,821	Dec.	10	2s.	82,782			
Modderfontein B.	700,000	June	20	4s.	140,000	315,000	—	140,000
	700,000	Dec.	25	5s.	175,000			
Robinson	2,750,000	June	8	8s.D	220,000	412,500	343,750	275,000
	2,750,000	Dec.	7	7s.	192,500			
Rose Deep	700,000	June	25	5s.	175,000	297,500	157,500	157,500
	700,000	Dec.	17½	3s. 6d.	122,500			
Village Main Reef	472,000	June	35	7s.	165,200	330,400	165,200	165,200
	472,000	Dec.	35	7s.	165,200			
Village Deep	1,060,671	June	10	2s.	106,067	159,100	79,550	106,067
	1,060,671	Dec.	5	1s.	53,033			
COMPANIES WITH HEAD OFFICES IN NATAL, MANAGED BY THE CENTRAL MINING AND INVESTMENT CORPORATION.								
City and Suburban	1,360,000	June	7½	6s.B	102,000	204,000	102,000	102,000
	1,360,000	Dec.	7½	6s.	102,000			
New Heriot	115,000	May	35	7s.	40,250	80,500	46,000	46,000
	115,000	Nov.	35	7s.	40,250			
CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA.								
Knights Deep	643,526	June	12½	2s. 6d.	80,441	117,617	80,441	64,352
	743,526	Dec.	5	1s.	37,176			
Simmer and Jack	3,000,000	June	7½	1s. 6d.	225,000	412,500	225,000	25,000
	3,000,000	Dec.	6¼	1s. 3d.	187,500			
Robinson Deep	1,000,000	June	12½	2s. 6d.	125,000	275,000	150,000	125,000
	1,000,000	June	2½	6d.E	25,000E			
	1,000,000	Dec.	12½	2s. 6d.	125,000			
EAST RAND PROPRIETARY ...	2,445,897	Aug.	12½	2s. 6d.	305,736	611,472	305,736	305,736
	2,445,897	Dec.	12½	2s. 6d.	305,736			
CONSOLIDATED MINES SELECTION.								
Brakpan Mines	750,000	June	20	4s.	150,000	243,750	112,500	187,500
	750,000	Dec.	12½	2s. 6d.	93,750			
JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY.								
Ginsberg	210,000	June	17½	3s. 6d.	36,750	73,500	31,500	36,750
	210,000	Dec.	17½	3s. 6d.	36,750			
New Primrose	325,000	June	30	6s.	97,500	195,000	81,250	97,500
	325,000	Dec.	30	6s.	97,500			
New Unified	250,000	June	10	2s.	25,000	50,000	25,000	25,000
	250,000	Dec.	10	2s.	25,000			
Witwatersrand	469,625	June	25	5s.	117,406	234,812	74,375	74,375
	469,625	Dec.	10	5s.	117,406			
Consolidated Langlaagte ...	950,000	Dec.	10	2s.	95,000	95,000	—	—
Glencairn	55,000	Dec.	5	1s.	27,500	27,500	—	27,500
Van Ryn Deep	1,196,892	Dec.	7½	1s. 6d.	89,767	89,767	—	—
New Rietfontein Estate ...	610,084	Dec.	2½	6d.	15,252	15,252	—	45,756

A Per 10s. share. B Per £4 share. C For five months ending June. D Per £5 share.
E Bonus. F Including £20,000 bonus.

Company.	Issued Capital.	Date of Declaration.	Rate per cent.	Rate per Share.	Amount.	Total Distribution for Year.	Amount Half Year. June, 1912.	Amount Half Year Dec., 1912.
GENERAL MINING AND FINANCE CORPORATION.								
Meyer and Charlton ...	200,000	June	30	6s.	60,000	140,000	50,000	F70,000
	200,000	Dec.	30	6s.	60,000			
	200,000	Dec.	10	2s.	20,000			
Van Ryn	500,000	June	25	5s.	125,000	237,500	112,500	112,500
	500,000	Dec.	22½	4s. 6d.	112,500			
ANGLO-FRENCH EXPLORATION.								
New Kleinfontein ..	970,000	Dec.	7½	1s. 6d.	72,750	72,750	—	48,500
S. NEUMANN AND COMPANY.								
Consolidated Main Reef ...	924,364	June	5	1s.	46,218	92,436	46,218	46,218
	924,364	Dec.	5	1s.	46,218			
Wit. Deep	550,000	June	15	3s.	82,500	192,500	68,750	68,750
	550,000	Dec.	20	4s.	110,000			
Wolhuter	860,000	April	6¼	1s. 3d.	53,750	86,250	75,250	75,250
	860,000	Nov.	3¾	9d.	32,500			
ROBINSON GROUP.								
Randfontein Central .	4,193,700	June	7½	1s. 6d.	314,527	419,370	—	209,685
	4,193,700	Dec.	2½	6d.	104,842			
Langlaagte Estate .	886,500	June	7½	1s. 6d.	66,487	88,650	43,475	86,950
	886,500	Dec.	2½	6d.	22,162			
A. GOERZ AND COMPANY.								
May Consolidated ..	288,750	June	5	1s.	14,438	28,876	43 312	28,876
	288,750	Dec.	5	1s.	14,438			
INDEPENDENT COMPANIES.								
Durban Roodepoort	125,000	June	10	2s.	12,500	31,250	12,500	18,750
	125,000	Nov.	15	3s.	18,750			
Jumpers	100,000	April	5	1s.	5,000	5,000	5,000	5,000
OUTSIDE DISTRICTS.								
NIGEL DISTRICT.								
Nigel	223,106	June	5	1s.	11,155	11,155	11,155	11,155
Sub Nigel	431,580	June	2½	6d.	10,789	21,579	—	21,579
	431,580	Dec.	2½	6d.	10,789			
BARBERTON DISTRICT.								
Sheba	269,738	Feb.	5	1s.	13,487	47,204	13,487	26,973
	269,738	June	7½	1s. 6d.	20,231			
	269,738	Oct.	5	1s.	13,487			
LYDENBURG DISTRICT.								
Ceylon Lydenburg ...	22,600	June	22½	4s. 6d.	5,085	6,215	—	6,215
	22,600	Dec.	5	1s.	1,130			
Glynn's Lydenburg ...	170,000	Jan.	10	2s.	17,000	17,000	17,000	25,500
Transvaal G.M. Estates...	604,225	Mar.	20	4s.	120,845	241,690	75,528	105,739
	604,225	Sept.	20	4s.	120,845			

Company.	Issued Capital.	Date of Declaration.	Rate per Cent.	Amount, Half Year, June, 1912.	Total Rate for Year.	Total Distribution for Year.	Rate.	Total Amount for Last Year.
COAL COMPANIES.								
Anglo-French (Pref.)	120,000	June	7½	9,000	16¼	19,500	10	12,000
	120,000	Sept.	5	6,000				
	120,000	Dec.	3¾	4,500				
Breyten	90,000	Dec.	10	6,000	10	9,000	10	9,000
Cassel	200,000	Dec.	5	10,000	5	10,000	7½	15,000
Coronation Coll.	83,000	June	5	4,150	10	8,300	11	9,130
	83,000	June	5	4,150				
Clydesdale Coll.	180,000	June	5	9,000	5	9,000	5	9,000
East Rand Coal and Gold	50,000	Dec.	5	2,500	5	2,500	5	2,500
Transvaal Coal Trust	515,760	June	10	54,576	17½	95,508	20	109,152
	515,760	Dec.	7½	40,932				
Transvaal and D.B. Inv. ...	185,000	Nov.	17½	32,375	17½	32,375	17½	32,375
Tweefontein Coll.	45,847	May	8¾	4,011	16¼	7,449	18¾	8,596
	45,847	May	7½	3,438				
Witbank	210,000	Feb.	15	31,500	25	52,500	30	63,000
	210,000	Aug.	10	21,000				

Company.	Issued Capital.	Date of Declaration.	Rate per Share.	Amount, Half Year. June, 1912.	Total Rate for Year.	Total Distribution for Year.	Rate	Total Amount for Last Year.
TIN MINES.								
Rooiberg	180,000	June	20	36,000	30	54,000	22½	40,500
	180,000	Dec.	10	18,000				
Swaziland Tin	82,000	June	20	16,400	25	20,500	10	82,000
	82,000	June	5	4,100				
Zaaiplaats	60,000	June	45	27,000	70	42,000	100	60,000
	60,000	Oct.	25	15,000				
DIAMOND COMPANIES.								
Blaauwbosch Diamonds ...	24,500	Mar.	20	4,900	80	19,600	—	—
	24,500	June	20	4,900				
	24,500	Sept.	20	4,900				
	24,500	Dec.	20	4,900				
Premier (Def.)	40,000	June	400	160,000	750	300,000	650	260,000
	40,000	Dec.	350	140,000				
Premier (Pref.)	40,000	April	125	50,000	250	100,000	250	100,000
	40,000	Oct.	125	50,000				
Roberts Victor	150,000	Sept.	10	15,000	10	15,000	—	—

Financial corporations are not included in the above totals, as in many cases their announcements to a large extent duplicate the dividends of subsidiary companies.

SOME ATTRACTIVE RAND SHARES.

Stocks Which Appear to be Remarkably Cheap at Present Prices—Has Pessimism Gone Too Far?

II.—CONSOLIDATED LANGLAAGTES AND AURORA WESTS.

We this week continue the series of articles commenced in our last issue. We then stated that, on the whole, the view that the Rand is appreciated at considerably below its true worth at the present time appears to have much to be said for it, and it is wholly reasonable to assume that the day will come, and in the not far distant future, when capital will again seek Rand investments. This week two other companies, the shares of which look attractive at present prices, are considered.

Consolidated Langlaagte.

With a capital of £950,000, a property amounting to 555 claims, a strong ore reserve position and profits of over £20,000 per month, the shares of the Consolidated Langlaagte mines appear to be a rather tempting purchase at anything around their present price of 30s. There is a debenture issue of £300,000 which, after all, is but little more than the profits of one year at the present rate of earning. A few months ago the company, it will doubtless be remembered, entirely liquidated its floating depth and entered the dividend-paying list at the end of the year with an initial distribution of 10 per cent., or 2s. per share. The life of the mine can be safely reckoned on at not less than 20 years; it is indeed highly probably that this will be materially exceeded in actual practice. In the deeper sections of the property recent development work is reported to have borne excellent results, and in the western section of the property ore of very rich character has recently been exploited. Twelve months ago the payable ore reserves in the mine were estimated at over two million tons of an average assay value of about 6½ dwts. per ton, and during the past twelve months the development position has, we understand, been well maintained. Having regard to all these facts, the shares at 50 per cent. above par value can hardly be accounted dear. Indeed, they appear to us for a dividend-paying venture with a long life assured to be cheap at this price.

Aurora West.

In the six months ended with November last the Aurora West Company has earned profits amounting to £31,544. The capital of this company is £106,352 10s. in 10s. shares, which are at present quoted at about 8s. This places the market valuation of this mine at under one hundred thousand pounds, and considering that the mine on the present basis of crushing has a life of close on 20 years, the price seems to be notably low. At the last annual meeting it was shown that the yield per ton of the ore treated had risen from the average of 24s. 9d. for the previous year to a recovery varying from 26s. 4d. to 28s. per ton. This was due to some extent to an improvement in stope values, but also to a re-arrangement of sorting methods instituted in the latter part of the year, which enabled the mine to increase the percentage of waste rock sorted out on the surface from approximately 15 per cent. of the total ore hoisted to 20 per cent. What Mr. Nathan called the main essentials of a successful proposition are certainly shown. The profits have steadily grown, and the improvement is being fully maintained; the ore reserves have appreciably increased, without any diminution in value, to an equivalent of more than three years' supply ahead of the mill; as regards the "life" of the mine, the directors have satisfied themselves that this is likely to be a long one. The only other really important question now unsettled is the liquidation of the company's liabilities for advances made by the General Mining and Finance Corporation—and this must wait upon the advent of better markets. At the end of last year the company's balance sheet showed an excess of liabilities over liquid assets of £149,482. This has since been materially reduced. Until arrangements can be made to liquidate this debt and re-adjust the company's finances on a sound basis dividends cannot of course be anticipated, but any improvement in the Kaffir market should quickly be reflected in the fortunes of this company. These shares, then, considering the low capitalisation of the concern, appear to be well worth paying attention to.

Ceylon Lydenburg.

The directors of the Ceylon Lydenburg notify the declaration of a dividend (No. 3) of 5 per cent. (1s. per share) for the half-year ending the 31st inst., payable to shareholders registered on that date.

MINING IN THE BARBERTON DISTRICT.

A Brief Review of the Field—How the Different Properties are Doing.

THERE are at present eleven producing gold mines in the Barberton district, the annual rate of output being close on a third of a million pounds. Time was when the Barberton area was a very much more important field than it is to-day. A quarter of a century ago Barberton, in the opinion of most people, ranked as a much more potentially important field than the Witwatersrand. and there was then great activity on the fringes of this prettily-situated town, and at Eureka, at Moodies, at Joe's Luck, at Kaapsche Hoop, and at all the other subsidiary mineralised areas of the Barberton field.

SPASMODIC POPULARITY.

But with the tremendous advance of mining on the Witwatersrand, Barberton soon sank into ill favour. From time to time in the past twenty years the district has enjoyed spasmodic bursts of popularity. These bursts have not, however, been of very lengthy duration. Many who have essayed mining in the Barberton District, after experience on the Witwatersrand, have, after a brief period, given up the field in disgust. Barberton, like all quartz mining districts, is a very different proposition to the Witwatersrand with its remarkably uniform value over a large area. The man who applies to a De Kaap mine the methods he has learned on the Witwatersrand is pretty certain to make a mess of things before long.

A PROMISING SMALL MAN COUNTRY.

There are, however, a good many men who of recent years have stuck consistently to the district and who have found success there. In some ways Barberton resembles the Selukwe district of Matabeleland. In topography and scenery—hilly, well watered and well wooded and picturesque-looking country—there are some distinct points of resemblance between these two widely-separated fields, and in both the problems of mining are rather those of the small worker, operating on an erratic and comparatively small payshoot rather than the problems of a large limited liability company owning a big equipment and operating on a large scale. Barberton, in fact, like a number of Rhodesian fields, is eminently a " small man's " field, although there are, of course, one or two large propositions, notably the Sheba. The majority of " reefs " in the area are, however, comparatively small ventures with pay ore shoots of limited size which experience in the past has proved are generally foredoomed to failure if development is attempted on very ambitious lines. Numbers of Barberton propositions which have in the past proved failures, would doubtless have very different reputations if they had been worked on a scale commensurate with their possibilities. Mention might be made of two or three mines which afford good examples of this latter statement. Attention may be directed, for instance, to the good results that have been obtained by working the Ulundi Mine on tribute, and the success that has attended the working of the Fortuna. This latter property is situated on the outskirts of the town, and a drive has been carried through one of the hills at the back of the township. Another proposition which is opening up well is the Fairvew Mine of the Transvaal Consolidated Land and Exploration Company, where two Nissen stamps and a small tube mill are working.

THE SHEBA.

The largest propositions in the district are, it is perhaps hardly necessary to state, the Sheba and the Worcester. The former is situated about six miles from Sheba siding, on the Kaapmuiden-Barberton line. From the siding small locomotives carry stores, etc., to and from the mine over an exceedingly picturesque miniature railway line. The Sheba has erected 120 stamps, and is at present operating about half these and earning a profit of from £4,000 to £5,000 per month. In the year ending December 31st, 1913, the Company distributed in dividends £47,204. Dividends totalling 17½ per cent. were declared in respect of the last financial year's operations—June 30, 1912, to June 30, 1913—and the outlook for the payment of a similar amount during the current twelve months is decidedly hopeful as will be seen from the following table, which states the quantities of ore crushed, working costs, and working profits since January last:—

1913.	Stamps working.	Tons milled.	Total Output. £	Per Ton. s.	d.	Working Costs. £	Per Ton. s.	d.	Total Profit. £	Per Ton s.	d
January ...	60	4,850	£13,877	57	3	£8,559	35	4	£5,319	21	11
February .	65	5,500	12,586	45	9	8,458	30	9	4,128	15	0
March ...	60	6,220	12,811	41	2	8,566	27	6	4,246	13	8
April ..	60	6,340	13,499	42	2	8,734	27	7	4,743	15	0
May ...	60	6,370	13,771	43	3	8,991	28	3	4,779	15	0
June ...	60	6,550	13,444	41	7	9,018	27	6	4,427	13	6
July	65	6,500	13,758	41	2	9,353	28	8	4,404	13	6
August ...	65	6,560	13,975	42	7	9,597	29	3	4,377	13	4
September ...	65	6,320	13,741	43	6	9 667	30	7	4,003	12	11
October	60	5,750	14,085	47	1	9,753	33	11	4,288	14	11
November ...	55	5,875	14,171	48	3	9,846	33	7	4,327	14	9

A feature of the development work undertaken during recent months at this property has been the gratifying manner in which the Intombi block has opened up. Barberton country is hilly and rugged, and the " Intombi fracture," as it is termed, lies about 500 feet above the collar of the Zwartkopje shaft—the main section of the property. Up to the end of the company's last year the Intombi shaft had been sunk over 400 feet and profitable values had been disclosed as a result of this sinking on the third, fourth, fifth and seventh levels. The driving at these points had results which enabled the management to include in the payable ore reserves 20,000 tons of Intombi ore which had an average assay value of 10 dwts. over a stoping width.

The ore reserves in the entire Sheba property at the end of June last were estimated at about 110,000 tons, as compared with about 127,000 tons at the end of the previous June. Principal contraction is shown in the Zwartkopje block, which at the end of June was estimated to contain about 70,000 tons of developed ore as against 105,000 tons twelve months previously. The estimated screen value for ore from this section of the mine remained the same at between 12 and 15 dwts. The reserves in the Insimbi and Southern Cross sections were neither increased nor decreased as regards both quantity and value during the twelve months ended with June last, but there was a marked improvement in the tonnage in the Intombi block—an advance of 18,000 tons accompanied by an increase of over 2 dwts. per ton in estimated screen value.

THE WORCESTER AND OTHER MINES.

The Worcester Mine has 40 stamps at work, operated by water power, and here a profit of £1,178 was earned in November. The only other productive mine in the Barberton district, which declares returns to the Chamber of Mines Mines is the Barrett, which is probably the lowest grade mine in Africa—a recovery of only 6s. 10d. per ton being recorded in respect of the November operations. There were, however, according to the Government Mines Department, eleven mines crushing in November, operating 192 stamps and three tube mills, and their total output was £28,896. In addition to this return there were reef and alluvial diggers in the Kaapschehoop District who found an additional £779 in gold. Barberton, by reason of the contour of the country and the abundance of water throughout the greater part of the district, offers very material facilities for cheap working throughout the greater part of its area. In some instances considerable sums of money have had to be expended in the transport of ore from mine to suitable milling sites by aerial ropeway, but mining by means of adit working, cheap labour, and the presence of the Queen's River and its tributaries, are factors which the small mine worker cannot but attach the greatest importance to in connection with this district.

INDUSTRIAL DISPUTES.

Strikes and Lock-outs—Conciliation and Disputes Board—Provisions of the New Bill.

THE Industrial Disputes Prevention Bill was published last week, its full title being a "Bill to make provision for the prevention of strikes by employees, lock-outs by employers, and for the settlement of industrial disputes by conciliation after investigation, to provide for the establishment of labour bureaux and for the registration of private registry offices and for other purposes." In so far as its provisions relate to the prevention of strikes and lock-outs, the appointment of conciliation and disputes boards and to the settlement of industrial disputes shall apply to the following undertakings, trades or industries, namely:—(a) The mining industry. (b) Any undertaking carried on by a local authority or company for the supply of gas, electric light, water or power, or for tramway or sanitary services. (c) Any undertaking, trade or industry carried on in a factory (as defined in any law relating to factories). (d) Any other undertaking, trade or industry to which the Governor-General may, by proclamation in the "Gazette," apply those provisions. But shall not apply to any undertaking or industry carried on by the Crown or by the Government of the Union or any Provincial Administration. In so far as this Act relates to other matters, it shall apply to all undertakings, trades and industries by whomsoever carried on.

WHAT IS AN INDUSTRIAL DISPUTE?

An "industrial dispute" or a "dispute" is deemed to exist whenever a dispute or difference exists between an employer and any of his employees in relation to: (a) Matters affecting work done or to be done by any of the employees. (b) Rights, privileges or duties of employers or any of the employees, not involving such a violation thereof as would constitute a criminal offence. (c) The wages, allowances or other remuneration ot employees or the price to be paid to any of them in respect of the employment. (d) The hours of employment, the qualification and status of employees, and the terms, conditions and manner of the employment. (e) The employment of particular persons or classes of persons, or the dismissal of, or the refusal to dismiss or employ any particular persons or classes of persons. (f) Claims on the part of an employer or employee that preference should be given or not be given, to one class of person over another class of person (whether as members of a trade union or not, as British subjects or aliens, as persons of European or non-European descent), and the circumstances under which such preference, if allowed, should or should not be given. (g) Material supplied and alleged to be bad, unfit, or unsuitable or damage alleged to have been caused to work. (h) Any custom or usage recognised, whether generally or in a particular locality or on particular industrial premises. (i) The interpretation of any agreement between an employer and an employee or of any portion of such an agreement.

STRIKES AND LOCK-OUTS DEFINED.

A strike shall be deemed to take place whenever there is (a) A cessation of work by a body of employees acting in combination; or (b) a concerted refusal of any number of employees acting under a common understanding, to work for an employer; and such cessation or refusal is: (i) In consequence of an industrial dispute; and (ii) in order to compel their employer, or to assist other employees in compelling the employer of those other employees to grant specific terms of employment. A lock-out is defined as: (a) A closing by an employer of his employment premises; or (b) a suspension by an employer of all work done by employees on the employment premises; or (c) a refusal by an employer to continue to employ any number of his employees; then, if the closing, suspension or refusal is (i) in consequence of an industrial dispute; and (ii) in order to compel his own employees, or to assist other employers in compelling their employees, to accept specific terms of employment.

CONCILIATION BOARDS.

Provision is made for the appointment of Conciliation Boards. A Conciliation Board, in order that it may be registered, shall consist in equal numbers of representatives of both employers and employees concerned. The employers' representatives may be chosen directly by employers or may be nominated by any registered trade union of the employers concerned. The employees' representatives may be officers of any registered trade union of the employees concerned or other persons, and may be chosen by those employees at a ballot at which every such employee working for wages or on piecework for the employer at this particular trade, industry or undertaking concerned, shall be entitled to vote. The ballots shall be conducted in the prescribed manner by an officer designated by the Minister. A registered Conciliation Board may, if an industrial dispute is likely to arise or has arisen upon a matter forming the subject of consideration and regulation by the Board, appoint any person to act as conciliator in the consideration of that matter, and if the Board is unable to agree upon a person so to act the Minister may, upon the request of the Board, appoint such person to act as conciliator as he deems suitable. The person so appointed to act as conciliator shall act as chairman of the Board in the consideration of any such matter instead of the member of the Board elected chairman. A person appointed conciliator shall confer with the members of the Board, conduct such inquiries and investigations as may appear necessary, and endeavour to bring about a settlement of any differences or of the dispute. A registered Conciliation Board may agree to be bound by the decision of an arbitrator, and may itself appoint or the Minister may, upon its request, appoint a person to be arbitrator

TERMS OF SETTLEMENT.

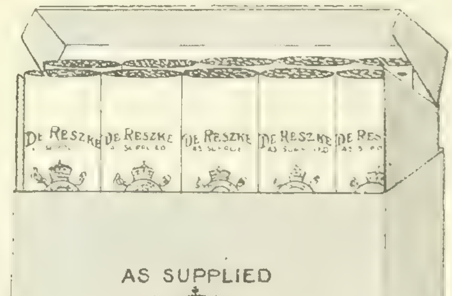
In the settlement of any matter regulated by a registered Conciliation Board, or determined by an arbitrator, a memorandum of the terms of settlement shall be drawn up and signed by the parties or their representatives. The terms of the memorandum shall be binding on the parties represented by the signatories, and may be made a rule of Court and enforced in the same manner as an award which has been made a rule of Court under any law relating to arbitration in force in the Province in which the dispute has arisen.

CONDITIONS OF EMPLOYMENT.

After the commencement of the Act, except in accordance with the resolution of a registered Conciliation Board: (a) No alteration shall be made by an employer or by any trade union of employers in relation to wages, allowances, or other remuneration of any employees or the price to be paid to them in respect of their employment, or to the hours of their work or to any conditions of their work or to the terms of their contract of employment unless fourteen days' notice at least of the proposed alteration be given to all the employees who would be affected thereby; and (b) no demand shall be made upon an employer or trade union of employers by any employees, or by any trade union of employees or officer thereof, to effect within less than fourteen days any such alteration. Any employer or trade union of employers, or any employee, or any trade union of employees, or any officer of any such trade union acting in contravention of this sub-section, shall be deemed to have attempted to effect a lock-out or cause a strike, and shall be liable on conviction to the penalties provided by this Act for that offence.

THE MINISTER'S POWERS.

If there exist between an employer and his employees any industrial dispute, or any disagreement as to a matter concerning their mutual relation, the Minister may, whether or not a registered Conciliation Board exists to deal with the matter: (a) Appoint on the application of the employer and of the employees concerned an arbitrator. (b) Appoint on the application of the employer or the employees concerned a conciliator (c) Of his own motion appoint any officer in the public



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service or any other person to hold an enquiry into the matter, or to mediate, or to organise a Board constituted as in Chapter 2 provided to settle the matter. (d) Appoint in manner provided by Chapter 5, and subject to the provisions of that chapter, a Disputes Board. An arbitrator shall, after consultation with the employer or his representative, and representatives of the employees concerned, give a decision as to the matter. A conciliator shall enquire into the causes and circumstances of the disagreement and shall endeavour to bring about an agreement between them. Lock-outs or strikes are prohibited pending investigation, and penalties are provided for the intimidation of employees or their relatives or departments.

DISPUTES BOARDS.

Whenever there exists between an employer and any of his employees any industrial dispute which they are unable to settle amicably, application may be made to the Minister by such employer or by any of such employees for the appointment of a Disputes Board. Any party to a dispute may appear before a Disputes Board: (a) In person; or (b) by any persons (not exceeding three in number) appointed by the party for the purpose. Every party so appearing shall be bound by the acts of its representatives. If any party to a dispute fails so to appear at any time, the Board may, unless satisfied that the failure to appear was due to a reasonable cause, proceed as if such party were appearing. The sittings of a Disputes Board shall, as far as possible, be held in the vicinity of the premises in, or in respect of which, the dispute has occurred, unless the Board otherwise determines. A Disputes Board shall hold its sittings in public: Provided that if, on application or of its own motion, it determine that any part of its sittings shall be held in private, it may order all persons (other than the persons appearing before it, the witnesses under examination, and the officers of the Board) to withdraw. In the course of the investigation it may make all such suggestions and do all such things as it may deem expedient and proper, to induce the parties to agree to a fair and equitable settlement. Either party to the dispute may agree to be bound by the recommendations of a Disputes Board in the same manner as parties to a submission to arbitration are under the law relating to arbitration in force in the Province in which the dispute exists are by the deed of submission bound. The draft of every such agreement may be transmitted by either party to the Minister, who shall send a copy thereof to the other party; if such other party agrees to be bound by the recommendations of the Board, then such recommendations may be made a rule of Court, and enforced in the same manner as an award which has been made a rule of Court under any such law as aforesaid. Save as aforesaid, the report or recommendations of the Board, or any proceedings had before it, shall not be enforced by any court of law.

BREACH OF CONTRACT.

If an employee of a local authority or company which, or person who supplies any community with light, power, water or sanitary service, wilfully and maliciously, either alone or by arrangement with other employees, breaks a contract of employment with that local authority, company or person, knowing or having reasonable cause to believe that the probable consequences of his so breaking such contract will be to deprive the inhabitants of such community, wholly or to a great extent, of their supply of light, power, water or sanitary service, he shall be guilty of an offence and liable on conviction to a fine not exceeding £50. If an employee of any employer whatever wilfully and maliciously, either alone or by arrangement with other employees, breaks any contract of employment whatever, knowing or having reasonable cause to believe that the probable consequences of his so breaking such contract will be to endanger human life, or cause serious bodily injury to, or serious injury to the health of any person, or to expose valuable property, whether movable or immovable, to destruction or serious injury, he shall be guilty of an offence, and liable, on conviction, to imprisonment with hard labour for a period not exceeding two years. Any person who incites or encourages an employee to commit an act which is an offence under this section shall himself be guilty of an offence, and liable, on conviction, to the penalties to which the employee would be liable if he committed the offence.

LIABILITY TO PUNISHMENT.

In any criminal proceedings under this Act against a company or association of employers, the secretary and every director or manager or chairman or president thereof in the Union may be charged with the offence, and shall be liable to be punished therefor, unless he proves that he was in no way a party thereto. In any such proceedings against a local authority, the mayor, chairman, town clerk, secretary or other similar officer shall be liable to be so charged with, and in like circumstances punished for the offence. In any such proceedings against a partnership, every member of such partnership who is in the Union shall be liable to be so charged, and in like circumstances punished for the offence. In any such proceedings against a trade union, the president, secretary and every other officer in the Union shall be liable to be so charged, and in like circumstances to be punished for the offence. That nothing in this section shall be deemed to exempt from liability any other person guilty of such offence.

NEW INQUESTS BILL AND THE MINING INDUSTRY.

Duties of Magistrates and Others Summarized.

A Bill to provide for the holding of inquests and other inquiries relative to deaths of persons who appear to have died from violence or otherwise than from natural causes was published in a "Gazette Extraordinary." The Bill sets forth that it shall be the duty of every person (a) who finds the dead body of a person who appears to have come by his death from violence or otherwise than from natural causes; or (b) to whom the knowledge of any such death may come; or (c) to whom any such death is reported, to notify as soon as possible the finding, knowledge or reports, together with any other facts in connection therewith which are known to him, to the magistrate of the district or to the person in charge of the nearest police station or police post, or to a field-cornet or justice of the peace. A field-cornet or justice of the peace shall, when so notified, forthwith cause the notification to be transmitted to the nearest police station or police post, or to the magistrate of the district. The person in charge of the police station or police post, when so notified, shall forthwith transmit the notification to the magistrate of the district, if the body is found within a radius of six miles from the magistrate's court-house, or to a field-cornet or justice of the peace if the body is found outside a radius of six miles from the magistrate's court-house. If there are reasonable grounds for suspecting that the death has been caused by an act or omission which amounts to a criminal offence, no person, except a magistrate, field-cornet, justice of the peace, police officer or medical practitioner, shall remove, disturb, or touch the dead body until it has been inspected or examined by a person so excepted. Any person who fails to comply with or contravenes any provisions of this section shall be guilty of an offence, and shall be liable, on conviction, to a fine not exceeding £25, or, in default of payment, to imprisonment, with or without hard labour, for a period not exceeding three months. Whenever it is notified to a magistrate that within a radius of six miles from his court-house any person has died from violence or otherwise than from natural causes, or is supposed or is suspected to have so died, such magistrate shall proceed as soon as possible to the locality where the death occurred and hold an inquest in some suitable place in that locality as to the cause of the death. The magistrate, if the body has not already been interred, shall inspect it, and may cause it to be examined by a medical practitioner, who shall, if possible, be the district surgeon. The magistrate may further, if he has grounds for suspecting that the death was caused by violence, order that the dead body, if already interred, shall be disinterred for examination by a medical practitioner.

Provision is made for the summoning of witnesses, who shall receive such fees and expenses as they would be entitled to receive if they were witnesses summoned to give evidence at a criminal trial before a magistrate's court in the district where the inquest is being held. Further clauses deal with arrests for the purposes of criminal proceedings and the duty of the field-cornet and justice of the peace to report to the magistrate in certain cases. Upon receiving such report as is in the last preceding section mentioned, the magistrate may, if in his opinion the circumstances of the case require it, hold an inquest for the purpose of ascertaining the cause of death and may thereupon exercise all such powers and functions, and shall perform all such duties in regard to the summoning and examination of witnesses, the inspecting and, if necessary, the disinterment of the dead body, as are hereinbefore conferred and imposed upon him in regard to deaths occurring within a radius of six miles from his court-house. If no inquest be held by the magistrate after receiving such report from a field-cornet or justice of the peace, and if no criminal proceedings are being instituted against any person for causing the deceased person's death, the magistrate shall transmit to the Attorney-General of the Province, or if the death occurred within the jurisdiction of the Eastern Districts Local Division of the Supreme Court, to the Solicitor-General for the Eastern Districts, the report of the field-cornet or justice of the peace or copy of it, together with such remarks thereon, if any, as the magistrate may think fit to make. The Attorney-General or Solicitor-General may, upon receipt of such report and remarks, require the magistrate to hold an inquest, in manner provided by this Act, as to the cause of such death, and the magistrate shall forthwith comply with any such requirement.

The Minister of Justice may, by notice in the "Gazette," from time to time assign one magistrate to exercise and perform in any two or more adjoining districts the powers conferred and the duties imposed upon a magistrate under this Act, and thereupon when there occurs in any such district a death as to which an inquest or enquiry under this Act may be held, the magistrate so assigned shall be deemed for all the purposes of this Act to be the magistrate. The expression "radius of six miles from the magistrate's court-house" shall nevertheless be deemed to mean that radius from the stated or ordinary place of holding the magistrate's court in each of the districts for which such magistrate has been assigned.

The laws repealed are the whole of the following: Cape of Good Hope: Act No. 22 of 1875; The Inquests Act, 1875. Transvaal: Act No. 8 of 1909; The Inquests Act, 1909. Orange Free State: Proclamation No. 14 of 1901; The Inquests Proclamation, 1901.

TRANSVAAL DIAMOND FIELDS' NOVEMBER OUTPUT.

Details for an Unfavourable Month.

THE effect of the exodus of diggers from Western Transvaal fields to the much belauded Killarney was even more pronouncedly shown by the November diamond output returns than in the preceding month. The total contributed by 38 different areas was 3,514 carats, valued at £12,444 1s., and the dwindled nature of this total will be gathered from the following figures for the eleven months of the year:—

	Carats.	Value.
January	7,105	£40,381 1 0
February	7,695⅜	43,063 6 0
March	8,917¾	49,805 19 6
April . ..	7,416	42,951 9 9
May	9,355⅜	58,472 3 0
June	7,252½	43,735 18 0
July	7,735	39,843 11 0
August	7,467⅝	33,344 12 6
September	6,828⅝	25,957 5 0
October	5,625	21,655 1 6
November	3,514	12,444 1 0
Total	79,010⅞	£411,651 8 3

A summary of the returns for last month is as follows:

	Carats.	Value.
Bloemhof	932⅝	£2,740 6 0
Eastleigh	348½	1,747 5 0
Kameelkuil	258	1,229 10 0
Dievedraai	265½	1,022 0 0
London	322½	970 17 6
Eerstebegin	208¼	779 2 6
Panfontein	253½	718 12 6
Rietput	157½	602 7 6
Doornbult & Rondevlei	132¼	462 0 0
Maroetjesfontein	125	395 0 0
Koppiesvlei ..	119¼	296 7 6
Kromellenboog	45½	214 12 6
Vechtvallei .	59¼	167 10 0
Kareepan 161 . .	56½	156 0 0
Avondster	50¼	139 5 0
Zwartlaagte	34½	127 0 0
Modderkraal	30	118 17 6
Zevenfontein	23¾	105 7 6
Goedgenoeg	23¼	93 0 0
Mooifontein	27	88 17 6
Christiana	16	64 0 0
Diamantdoorns ...	15¼	50 15 0
Jala Jala	8¼	29 0 0
Olivenfontein	9¾	25 5 0
Schweizer-Reneke ...	14½	19 15 0
Van Zyl's Drift	5¾	19 0 0
Hamburg	8½	17 0 0
Vaalpoort	2¾	12 0 0
Slachtkraal	3	11 0 0
Nauwpoort	3½	9 15 0
Grootdoorns	5¼	9 0 0
Katboschfontein ...	3¼	9 0 0
Weltevreden	5½	6 5 0
Zoetfontein	1½	5 0 0
Leeuwbosch	1¾	3 12 6
Kareepan 137	2¼	2 15 0
Biesjeslaagte	3	2 0 0
Kuilfontein	1¼	1 5 0
	3,514	£12,444 1 0

WORKMEN'S WAGES AND SECURITY OF PAYMENT.

The Position of Contractors.

AMONGST the draft Bills published in a "Gazette Extraordinary" is one to make better provision for securing the payment of workmen's wages. It provides that wages due to a workman are to be a first charge on money payable to a contractor, and that assignments or attachments made by a contractor are void as against workmen. Any workman whose wages remain unpaid for 48 hours after the time at which they have become due and have been demanded may serve upon the principal a notice of attachment, supported by a solemn declaration. Upon service of any such notice, the amount of money specified therein shall be retained by the principal out of the moneys due or to become due from him to the contractor until the Magistrate's Court of the district in which the work is being done or is to be performed directs to whom and in what manner the moneys are to be paid, or until the workman consents in writing to the withdrawal of the attachment: Provided that the principal may pay into the said court the sum specified in the notice of attachment, and the receipt of the clerk of that court for such sum shall be a full discharge to the principal of his liability under the attachment. The principal or clerk of the court may pay the workman with the contractor's consent. When the workman obtains judgment from the contractor, the Court may order the principal to pay. The principal, however, is not liable to pay more than is due from him to the contractor. If a principal upon whom a notice of attachment and an order for payment have been served under this Act fail to pay in accordance with the order, the workman may recover the amount from the principal by action in the Magistrate's Court of the district in which the work was performed, or in which the principal resides or carries on business. Any number of workmen who are or have been in the employment of the same contractor may join, in serving upon the principal a notice of attachment, or in obtaining an order against the principal, or in recovering an amount from the principal by action under this Act, or in any action against the contractor for the recovery of wages due to them. A Magistrate's Court shall have special jurisdiction to issue an order, or to give judgment for any amount claimed under this Act, together with the costs of obtaining such order or judgment, anything to the contrary notwithstanding in any law relating to Magistrates' Courts. The Act is not to affect other remedies or to vary rights between the parties. Workmen in the employment of a sub-contractor have the same rights and remedies against the contractor as a workman in the employment of a contractor has against the principal. It is set forth that "work" shall mean any work of labour, whether skilled or unskilled, performed or commenced upon or in connection with: (a) The construction, decoration, alteration or repair of any building or structure; (b) the development of working of any mine, prospecting works, quarry, sand-pit, water-course, embankment, dam or other excavation; (c) the construction, alteration, repair, maintenance or working of any railway, tramway, light or water supply scheme or undertaking, or sewerage or sanitary scheme or undertaking; (d) the placing, fixing or erection, or the repair of any materials, plant or machinery; (e) the manufacture, alteration or improvement of any article of movable property; "workman" shall, in relation to a contractor or to any work, mean a person employed by that contractor to perform that work.

It is notified that it is the intention of His Excellency the Governor-General to deproclaim as a public digging the Government farm Vitown No. 282, district Lydenburg, mining district Pilgrims Rest, Transvaal Province.

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GETTING GOLD FROM WASTE ROCK.[*]

Important Results from Sampling Old Waste Rock Dumps.

[By ROBERT DURES.]

For many years past I have been increasingly interested in the fascinating question of what is the lowest value of ore that will pay on these fields, and its ever shifting answer. This interest was greatly accentuated by a residence of some years in Rhodesia, where opportunities presented themselves of seeing very low grade ores worked at a profit. Looking back on the past history of mining on the Rand, and remembering the methods of sorting then in use, it occurred to me that there must be some good values in the fine dirt brought up during development operations. I therefore set to work on my return to Johannesburg last year to sample some of the old waste rock dumps, and in a few months had taken a large number of samples from over 50 dumps many of which had been lying out for 15 or 20 years. Especial care was taken over those dumps that consisted mostly of development rock, and particularly from the mines that were developed *on the reef*, as it was among these, naturally, that the highest values were obtained. In each case a classification was made as follows:—(1) Fine—material pasing 1 in. mesh. This is very friable, and could be sent direct to the tube mille. (2) Medium –pieces of rock from 1 in. to 2½ in., to be sent to the battery. (3) Coarse the big lumps of waste, some of which had pieces of reef attached, and what was of more importance, pieces of "contact" carrying gold-bearing mineral. I found that the best way was to go over the dump three times, sampling each of the three classes separately. With some experience it is easy to detect the valuable *contacts*, and to know which reefs they have been lying in touch with. From the results of my tests I am convinced that many mines have at grass, or had a year ago, from two to twelve weeks' crushing of payable ore in their development dumps—in a condition that lends itself to easy treatment. The amount of *fine* varied from 30 per cent. to 50 per cent., and its value was mostly above the average of the dump, and in several cases reached twice the value of the rest of the rock, in others three and four times as much. Good sampling faces were found in the waste rock dumps which were penetrated when material had been taken from them to make concrete, or, when quantities had been carted away to make "metal" for road making and mending. From the values obtained it was clear that these particular dumps had not been sampled, else the ore would not have been sold to road contractors, and I have not been able to find any records of a thorough and systematic sampling of these dumps. Here are the results of samples taken from an ore dump with which I was familiar:—1. North side, 5·8 dwt. 2. Centre, 3·5 dwt. 3. South side, 1·3 dwt. 4. North side, 6·2 dwt. 5. Centre, 3·0 dwt. 6. South side, 4·0 dwt. 7. Fine, 3·7 dwt. 8. Medium, from 1 in. to 2½ in., 4·3 dwt. 9. Coarse, big pieces of rock, 1·8 dwt. 10. Reef sorted out, 2·5 dwt. This dump would be worth about 16s. a ton, and it is safe to say that with up-to-date handling and treatment a profit of 10s a ton could be made from it. The profit to be made would to some extent depend on the capacity of reduction plant. Here are the results of general samples taken from a very old dump:—1913: February 18, 3·6 dwt.; February 19, 6·6 dwt.; February 21, 3·1 dwt.; February 22, 3·9 dwt.; February 27, 4·8 dwt.; March 5, 2·8 dwt.; March 6, 2·3 dwt.; March 7, 3·1 dwt.; March 8, 3·3 dwt.; March 12, 2·6 dwt.; March 13, 3·5 dwt.; total, 39·6 dwt.; average, 3·6 dwt. As far as I have been able to ascertain, 3·6 dwt. is about the average value to be expected from dumps of this class. This is borne out by what I am told of the values of two large dumps now under course of treatment. As you dig into a dump you will frequently find the big pieces covered with fine dirt, and it was interesting to discover that on washing the big pieces that the sediment from the water used for washing assayed 12·5 dwt. Occasionally high samples are encountered even in waste rock which has been sorted recently, and the following are assays of samples taken during this year of current waste rock: 22 dwt., 24 dwt., 267 dwt., 4·5 dwt., 5 dwt. In searching for waste dumps it was curious to find that one or two of them had been sent underground for "packing stopes," or merely to fill up an abandoned shaft, and at least one had been flattened out to make room for construction work. Several valuable dumps, too, have been covered up or partly covered with ashes. Others lie under masses of more recent waste rock, and I have in mind now one dump that has been uncovered, and the more recent rock carefully turned over and hand picked. The old development dirt still stands, and on sampling the fine stuff on the surface, and reducing the higher assays the result was 4 dwt. per ton. Extraction tests were made: (1) By shaking with mercury, when extractions were got of from 65 per cent. to 85 per cent.—one sample of 4·7 dwt. giving an extraction of 87 per cent. (2) Laboratory tests with cyanide showed that there is apparently no difficulty in the treatment of waste rock dumps. Owing to the friable nature of the ore in the dumps, the crushing would be very easy, also in the tube mill, so that the reduction costs would be lower than on current rock. Probably the difference would be more than enough to pay for tramming the waste to the reduction works. In most cases it would be unnecessary to do any sorting at all with the old development dumps, and thus save the cost of washing and sorting the big pieces. In some it would be of advantage to sort out 25 per cent. to 30 per cent. of big rock

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[*] Abstract from a paper read before the Chemical, Metallurgical and Mining Society of South Africa.

MINING MEN AND MATTERS.

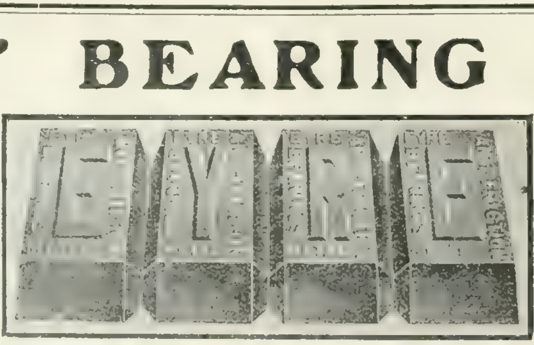
Mr. Whitehead, underground manager of the New Kleinfontein Mine, has tendered his resignation to the directors of the company.

* * * *

Presentations took place at the Meyer and Charlton last week to Mr. W. Reid on leaving the mine, and to Mr. G. H. Birdman on being transferred to head office. The manager paid warm tributes to both gentlemen. Several of the heads of departments also made speeches in a similar strain.

Robinson Group: Shortage of Native Labour.

In announcing the declaration of dividends of 2½ (two and a half) per cent. by each company for the half-year ending December 31, 1913, the directors of the Randfontein Estates G.M. Co., Ltd., Witwatersrand, Ltd., the Randfontein Central G.M. Co., Ltd., and the Langlaagte Estate and G.M. Co., Ltd., regret that the acute shortage of native labour has disappointed their expectations of being able to work the mines to their full capacity and advantage, but think there will be a considerable increase in the native complements early in the new year.



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RHODESIA'S MINERAL OUTPUT.

Details for November—Average Well Maintained.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of November, 1913, with comparisons and values:—

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Bulawayo District—				
Abercorn 1. (W. J. Lane)	2	170	[illegible]	[illegible]
Do. (sands)	- -	190	29·11	122
Agincourt (H. L. Maidwell)	5	194	154·79	650
Atlas (Est. R. Barkley, decd.)	10	988	174·60	733
Do. (sands)	—	650	49·38	207
Bembesi 1. (Rosevear & Nankervis)	2	45	11·72	49
Big Ben (W. E. Hunt)	4	165	94·38	396
Do. (sands)		132	46·37	195
Bilhah (P. I. Weale), sands	--	126	9·10	38
Blanket (Forbes Rhod. Synd., Ltd.)	15	750	138·19	580
Blue (J. Eisenhammer)	2	50	20·99	88
Bobs (Bobs Reef Syndicate), sands	-	300	6·98	29
Bushtick Mines, Ltd.	24 3T	6,201	273·23	1,148
Do. (sands)	-	3,295	621·95	2,612
Do. (slimes)	·	2,729	265·58	1,115
"C." (D. & S. Syndicate)	10 1C	1,125	46·39	195
Do. (sands)		959	109·12	458
Do. (slimes)	–	166	44·78	188
Carry (S. & G. Syndicate)	1 H	60	63·56	267
Do. (sands)	—	180	158·03	664
Champion H. & 1SE (R. Aserman)	5	749	154·26	648
Do. (sands)	—	330	35·13	148
Claremont (B. L. Whyte)	10	800	81·69	343
Clean Up (H. W. Bearcroft)	5	270	139·18	584
Colleen Bawn (Colleen Bawn Syndicate, Ltd.)	6 1P	686	50·85	214
Do. (sands)		400	63·88	268
Do. (slimes)	—	350	104·95	441
Cottage (Cranleigh Syndicate)	2	100	30·60	128
Do. (sands)	—	60	8·72	37
Criterion Gold Mines, Ltd.	10	1,304	739·61	3,106
Do. (sands)		720	112·46	472
Eagle A. (Macdonald & Co.)	10	743	206·13	866
Do. (sands)	·	434	30·98	130
Elumba A. (Cooper & Bosomworth)	5	300	69·44	292
Do. (sands)	—	300	52·76	222
Farvic (H. S. Henderson)	5	482	510·71	2,145
Do. sands)	·	280	12·20	51
Flora (E. E. Beecroft)	5	303	143·99	605
Fred (Transvaal & Rhod. Est., Ltd)	10 2P	1,226	902·48	3,790
Do. (sands)	—	1,276	150·33	631
Godwin B. (Barrett & Stacey)	5	110	78·56	330
Golden Butterfly (Wheeler, Davis & Rintoul)	5	476	206·87	869
Gwen (H. J. Collins), pannings	—	—	2·03	9
Imani (E. Rochfort)	2	184	100·88	424
Intabanenda (Est. B. Smallie, decd.)	5	280	73·00	307
Do. (sands)	—	185	23·37	98
Jumpers (J. P. McCay)	5	250	160·65	697
Kamcel (New Rhod. M., Ltd., and A. M. Rhodes)	5	550	192·57	809
L. (J. A. Warwick)	5	296	81·95	344
Li Hang Chang (G. Leach)	3	55	14·35	60
Limes (D. Vincent)	5	200	43·07	181
Little Beauty (T. A. Matthews)	3	25	31·17	131
Lonely Reef G.M. Co., Ltd.	20 3T	4,750	1,142·34	4,798
Do. (slimes)	—	4,750	3,259·57	1,369
Matabele Queen's Co., Ltd.	10	1,800	308·11	1,294
Do. (sands)	- -	1,800	486·96	2,045
Do. (slimes)	- -	400	33·40	140
Minnie's Luck A. (C. M. Reid)	5	195	32·56	137
Nelally (Est. W. Hogg, decd.), pannings			2·32	10
Nelly (F. D. Roscoe)	3H	929	505·15	2,122
Do. (sands)	-	480	133·03	559
New Eclipse (J. R. Stewart)	5	1,033	175·54	737
Do. (sands)	—	530	32·23	135
New Insimbi (P. G. Challen)	5	120	42·98	180
Old Nic (Chart. & Gen. E. & F. Co., Ltd.)	15 4P	2,171	743·14	3,121
Do. (sands)	—	1,110	131·44	552
Peach A. (C. Salomon)	5	190	246·69	1,036
Penzance (Penzance Trib. Synd.)	2	142	54·16	227
Do. (sands)	—	60	30·27	[illegible]
Polka (W. H. Robinson)	2	[illegible]	17·39	[illegible]
Poort (J. R. Barnes)	2	156	[illegible]	310
Princess (C. A. Abbott)	2	115	21·24	89
Riverside (R. Martindale)	2	40	8·72	37
Do. (sands)	—	90	13·81	58
Roan (J. R. Robinson)	[illegible]	[illegible]	[illegible]	[illegible]
Rose 2W. (W. A. Carter), sands		480	26·77	112
Rubble (J. Gilpin)	5	190	23·25	98
Selborne (Selborne Syndicate)	3	154	49·66	209
S. Felix (A. W. Wilson)	5	518	165·11	693
Do. (sands)	-	[illegible]	36·40	153
Star (Romola Nigel G.M. Co., Ltd)	5	349	145·52	611
Susanna Mines, Ltd.	8	839	249·65	1,049
Do. (sands)	-	612	51·54	216
Do. (slimes)		242	63·94	269
Teutonic (Macdonald & Bonshor)	5	598	242·87	1,020
Do. (sands)	- -	600	57·79	[illegible]
Tuff Nut (King's Syndicate)	5	400	155·26	652
Do. (sands)		250	47·02	197
Winifred (Rhod. M. M. Exchange)	1 I.R.	70	52·81	222
Xmas (M. Westerberg)	2	21	10·37	44
Bulawayo district total			[illegible]	[illegible]
Gwelo District—				
Alderman (Williams & Woodgate)	[illegible]	[illegible]	[illegible]	[illegible]
Ardpatrick (C. Mildenhall)	5	370	[illegible]	[illegible]
Arizona No. 2 S. (L. R. Evans)	2	135	43·89	184
Bedad (A. & B. Syndicate)	5	520	[illegible]	[illegible]
Bee (Bee Syndicate)	2	120	[illegible]	[illegible]
Blue Gum (H. B. Christian)	1 H	393	56·57	238
Do. (sands)		[illegible]	[illegible]	[illegible]
Collingwood (Pini & Wearing)	BM (4GR)	1,202	245·75	1,032
Churchill (J. Jones)	(6)	45	[illegible]	[illegible]
Csardas (Wolshall Syndicate)	10	565	585·41	2,459
Do. (sands)		[illegible]	[illegible]	[illegible]
Do. (slimes)	–	115	[illegible]	[illegible]
Eileen (M. L. Price)	5	[illegible]	[illegible]	[illegible]
Elysion (Holmes & Urquhart)	5	[illegible]	[illegible]	[illegible]
Gaika G.M. Co., Ltd.	5 1C	[illegible]	[illegible]	[illegible]
Do. (sands)	—	1,289	61·79	259
Do. (slimes)		1,247	[illegible]	[illegible]
Gartley (A. J. Grant)	2	90	[illegible]	[illegible]
Do. (sands)	·	90	[illegible]	[illegible]
Globe and Phoenix G.M. Co., Ltd.	40 10P	6,582	7,965·66	33,457
Do. (concentrates)	-	[illegible]	[illegible]	[illegible]
Do. (slimes)	—	2,521	561·08	2,357
Gothic (Mashonaland Agency, Ltd.)	15 2P	1,180	422·24	1,791
Invulnerable (W. H. Steele)	5	27	[illegible]	[illegible]
Loongana (A. Malcolm)	5	172	77·92	327
Maisie Luck (J. Jones)	6	90	30·42	128
Moonie River (Yellow Jacket Synd)	5	368	91·80	386
Moss (James & Morrisby)	2	[illegible]	[illegible]	[illegible]
New Dunraven G.M., Ltd.	5	[illegible]	[illegible]	[illegible]
Do. (sands)	—	[illegible]	[illegible]	[illegible]
New Moss (Robinson & Bennett)	2	228	55·72	234
North Bonsor (Cornish Syndicate)	20	2,430	420·39	1,766
Do. (sands)		[illegible]	[illegible]	[illegible]
Paradox (Bolt & Franks)	5	[illegible]	[illegible]	[illegible]
Pompei (F. Brorson)	2	250	[illegible]	[illegible]
Red Hill Dev. Syndicate, Ltd.	1C	1,113	40·54	170
Do. (sands)	-	[illegible]	[illegible]	[illegible]
Rose of Sharon 1 W. (Crampin & Masters)	10	[illegible]	[illegible]	[illegible]
Selukwe Columbia G.M., Ltd.	1 C 3 P	1,900	856·50	3,610
Do. (concentrates)	–	50	[illegible]	[illegible]
Do. (sands)		1,550	[illegible]	[illegible]
Do. (slimes)	—	500	64·00	267
Do. (clean up)	–		[illegible]	[illegible]
Snowed Up 1 S.E. (James & Morrisby)	5	550	[illegible]	[illegible]
Tebekwe (A. N. Tyrrell)	15	1,121	[illegible]	[illegible]
Tebekwe 1 (A. N. Tyrrell)	(5)	336	93·18	391
Tebekwe B. 2735a (H. C. Baker)	10	198	18·67	78
Twin Nugget (Cannell & Begwald)	2	[illegible]	[illegible]	[illegible]
Wanderer (Selukwe) G.M., Ltd.	4 GR	[illegible]	[illegible]	[illegible]
Welcome Back (F. C. Luxan)	2 & 1 H	[illegible]	[illegible]	[illegible]
Do. (sands)		[illegible]	[illegible]	[illegible]
Gwelo district total			17,810·49	74,622
Matabeleland total		[illegible]		
Value		£141,543		

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Hartley District—				
[illegible] Gold Mines, Ltd.	[illegible]	510	76·03	319
Do. (sands)			38·60	162
Agnes (P. S. [illegible])	5	[illegible]	144·87	608
Alabama (Rix & Reynolds)	5	200	181·50	[illegible]
Auriga (Hartley Pioneer Synd.)	5	390	53·79	226
Baltimore & Virginia (P. A. Enke)	1 Pn	150	21·45	90

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
Battlefields (Rhodesia), Ltd. (Minnaar & McArthur)	20	1,705	137·[illegible]	576
Do. (sands)	—	1,364	131·72	553
Do. (slimes)	—	340		
Blue Rock (Blue Rock Synd.)	2	225	45·65	192
Do. (sands)	—	225	63·47	266
Birdie, 1 (G. Wright)	(5)	80	37·43	157
Brilliant (Mabel's Luck Synd.)	7 1P	1,050	359·00	1,508
Do. (sands)	—	337	92·47	388
Buller (J. Laing), clean-up		—	40·60	171
Do. (slimes)	–	330	52·14	219
Calton A. (Kanyemba & Windley)	5	500	125·66	528
Cheshire Cat (Arnold & Windley)	5	835	380·19	1,597
Do. (sands)	–	400	88·48	371
Do. (slimes)	—	191		
Concession and W. Extension (C. E. Simpson)	5 1C 2P	3,192	570·23	2,395
Do. (sands)	-	2,150	86·85	365
Crown II. (Crown Syndicate)	2	130	22·99	97
Do. (sands)	—	100	13·41	56
Cuba (C. C. Hendrie)	2	22	6·55	27
Dalny (Macdonald & Sale)	5	902	50·43	212
Do. (sands)	—	902	118·30	497
Dalny 1W. (Shagari Mines, Ltd.)	5	325	45·50	191
Do. (sands)	—	180	30·14	127
Dreadnought B. (W. E. Masters)	1 C	336	94·35	396
Eiffel Blue & E. Ext. (Willoughbys)	10	1,414	640·60	2,690
Do. (sands)	—	820	70·62	297
Enny Ext. (Ellsmoor & Goodyer)	5	340	103·51	435
George (Heroine G.M. Co., Ltd.)	10	1,441	45·90	193
Giant Mines of Rhodesia, Ltd.	30 2T	9,100	1,965·17	8,336
Glasgow Mines, Ltd.	5	496	284·85	1,196
Do. (sands)	—	170	92·88	390
Glencairn No. 3 (Glenrosa Synd.)	4	352	256·72	1,078
Do. (sands)	—	253	19·87	84
Golden Valley (J. Mack)	10	940	276·68	1,162
Do. (sands)	—	560	138·64	582
Inez (Harill & Smith)	10	600	138·13	580
Do. (sands)	—	400	43·54	183
Invar (H. Moser)	5	620	70·75	297
Irish Molly (C. Tallon)	2	60	9·49	40
Juno (H. R. Nicholl)	5	143	31·30	131
Do. (sands)	—	75	27·85	117
Medea (Medea Syndicate)	2	18	7·36	31
Midwinter (Midwinter Syndicate)	4	342	73·20	307
Do. (sands)	—	300	33·06	139
Owl (A. Rolfe)	10	1,326	501·51	2,106
Do. (sands)	—	1,184	170·08	715
Do. (slimes)	—	216		
Pickstone Gold Mines, Ltd.	10 1C	3,081	687·40	2,887
Pomposo (J. Knott)	5	320	132·50	556
Rosaline (J. F. Meade)	5	180	43·97	185
Rover (S. H. Coker), sands	—	468	39·17	165
Seigneury (Seigneury Syndicate)	5	444	201·35	846
Do. (sands)	—	378	25·06	105
Shepherds (Phoenician (Rhod.) Co., Ltd.)	5 1T	1,020	353·12	1,483
Do. (sands)	—	1,020	219·24	921
Sid (Sebawke & Dist. Mines, Ltd.)	5	528	177·21	744
Do. (sands)	—	390	63·48	267
St. John del Rey (C. G. Downie)	5	412	55·10	231
Thistle-Etna G.M., Ltd.	1C	2,885	917·56	3,854
Do. (sands)	—	2,146	204·51	859
Do. (slimes)	—	608	43·62	183
Do. (other sources)	—	—	12·53	52
Trinidad 1 (T. McDowell)	2	120	73·18	307
Try Me 2 (R. R. Aitkin), sands	—	150	42·96	180
Washington (I. J. Minnaar)	5	380	184·81	776
Do. (sands)	—	320	34·27	144
Hartley district total			11,621·60	48,890
LOMAGUNDI DISTRICT—				
Alluvial (G. Blacklaws)	—	—	43·69	183
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	7,200	2,232·17	9,468
Do. (sands)	—	7,073	525·67	2,229
Do. (other sources)	-	—	77·33	319
Linnett (A. R. Morkel)	3	710	65·16	274
Lone Hill (F. B. Platt)	2	115	30·67	129
Ventura (Stone & Standen), sands	—	200	13·60	57
Lomagundi district total			2,988·29	12,659
MAZOE DISTRICT—				
Alligator (R. Athey)	1D	4	2·13	9
Glandore (Harries & Cooke)	2	120	61·41	236
Goth B. (Goth Syndicate)	2	400	14·47	61
Do. (sands)	—	600	28·02	118
Honest (G. Brown)	3	126	47·53	200
[illegible] Synd.), sand	—	360	[illegible]	[illegible]
Jumbo G.M. Co., Ltd.	30	[illegible]	[illegible]	2,885
Do. (sands)	—	2,2[illegible]	[illegible]	[illegible]
Do. (slimes)	—	1,200	106·96	454

	No. of Stamps.	Tons Treated	Yield. ozs.	Value. £
Kimberley (Mash.) G.M. Co., Ltd.	6 2T	3,200	746·72	3,165
Do. (sands)	—	1,450	437·25	1.845
Do. (slimes)	—	1,800	243·21	1,027
Last Kick (Dominion G.M. Rhod. Co., Ltd.)	5	90	30·95	130
Micky (Micky Syndicate)	2	179	116·87	491
Mitre 8 (Bishop's Syndicate)	1D	13	15·47	65
New Found 1 N. (D. H. Curry)	—	—	5·90	25
Do. (sands)	—	900	135·60	569
Oceola G.M. Co., Ltd.	5	580	211·48	888
Do. (sands)	—	400	61·51	258
Puff Adder (Puff Adder Syndicate)	2	231	123·23	518
Rosehearty 1 (Rosehearty Synd.), pannings	—	—	·68	3
Tom Cat (Williams & Abbott)	1 P	120	23·45	98
Umkulu D. B. 1 W. (Head & Manson), sands	—	420	29·21	123
Venus (Giles & Southey)	2	243	56·92	239
Xmas 1 N.W. (D. Pearce)	2	210	55·07	231
Mazoe district total			3,451·34	14,564
SALISBURY DISTRICT.—				
Arab (Arab Syndicate)	1D	12	15·57	66
Aroturus (D. Chiappini), sands	—	500	70·55	296
Banker (Dyason & Wells)	3	34	8·96	38
Briar (J. Seton Rogers), sands	—	220	7·47	31
Inyague 3 (Hodge & Von Hagen)	2	220	95·24	400
Do. (M. Friend), sands	—	300	23·16	97
Joker (Manduza Syndicate)	2	176	87·34	367
Louise Grand (H. S. Plant)	1H	1,010	60·49	254
Do. (sands)	—	1,010	61·23	257
Mont d'Or (Claxton & Bussell)	2	160	44·53	187
New Full Back G.M. Synd., Ltd.	2	30	6·36	27
Old Loyalty (Shamva Ilex G.M. Co., Ltd.)	5	376	188·63	792
Salisbury district total			669·53	2,812
UMTALI DISTRICT.—				
Cairndhu 2 W (E. K. Evans), sands	—	230	13·57	57
Champion (J. Buchanan)	5	800	127·07	534
Do. (sands)	—	510	255·95	1,075
Do. (slimes)	—	290		
Elgin (Umtali Waterfall Synd.)	10	458	156·96	659
Do. (sands)	—	248	42·79	180
Do. slimes)	—	210		
Kent (E. Evans)	5	740	232·19	975
Do. (sands)	—	105	29·25	123
King's Daughter D.B. (Umtali Waterfall Syndicate), slimes	—	960	115·99	487
Liverpool 38 (R. G. Snodgrass)	5	300	48·93	205
Do. (sands)		120	31·91	134
Oriental (J. Martin)	1H	42	4·21	18
Pilgrim 2 E. (J. Meikle)	5	540	95·48	401
Quagga (Quagga Syndicate)	5	420	110·51	464
Rezende Mines, Ltd.	105	15,935	1,697·86	7,204
Do. (concentrates)		174	594·09	2,487
Do. (sands)	—	2,468	370·25	1,571
Sheepskin (H. Norris)	5	300	25·97	107
Two Sisters (F. E. Markham)	2	140	47·04	198
Umtali district total			4,000·02	16,881
VICTORIA DISTRICT.—				
Texas (G. Scott)	10	1,215	321·05	1,348
Do. (sands)	—	675	80·75	339
Victoria district total			401·80	1,687

Mashonaland total	23,132·58 ozs.
Value	£97,493
Grand total gold output	56,830·63 ozs.
Value	£239,036

SUMMARY.

	Ozs.	Value.
Gold—		
Matabeleland	33,698·07	£141,543
Mashonaland	23,132·58	97,493
Grand total gold output	56,830·63	£239,036
Silver, ozs.	11,088·32	1,146
Lead, tons (Rezende Mines, Ltd.)	22·85	348
Chrome iron, tons (Rhodesia Chrome Mines, Ltd.)	8,990·67	20,068
Asbestos, tons (E. Frankis, King Mine.)	113·23	2,038
Diamonds, carats (S.A. Option Syndicate, Ltd.)	21·75	90
Coal, tons (Wankie Colliery Co., Ltd.)	20,801·00	6,818
Total value of mineral production		£269,544

THE UNION MINIÈRE MEETING.

Mr. Jadot on Increased Outputs from Katanga—The Cost of Production Discussed.

PROGRESS on the great Katanga belt has been slow—necessarily slow—and it will be readily admitted that before the dazzling industrial spectacles that have been conjured up by Mr. Robert Williams and his Belgian colleagues are achieved a further vast amount of uphill work will have to be accomplished. But it is at least satisfactory to know that the Union Minière and the Tanganyika Concessions are not standing still and that the work carried out during the past few months has brought the day when the plans will materialise sensibly nearer.

In opening the meeting of the Union Minière held in Brussels a few weeks ago, M. Jadot submitted a table, recapitulating the work done and the results obtained, and indicating the progress made since the inception of the metallurgical trials, and, proceeding, said: You will observe the progress; from a daily production of 11 tons in the first year we have increased to 15·6 tons, and to as much as 33·4 tons when both furnaces were operating simultaneously. The consumption of coke, which in 1911 amounted to 3·44 tons of European coke for each ingot of copper produced, was reduced in 1912 to 3 tons, of which a quarter has been Wankie and three-quarters European coke. It was only at the end of 1912 that we commenced to employ Wankie coke on an industrial basis. In 1913 we have consumed none but this kind of coke. During the first six months, when the Wankie Collieries had no installation for washing coal, the coke had to be manufactured from unwashed coal; we have utilised 3·44 tons of this impure coke per ton of ingot. In the five months following, during which the coke was obtained from washed coal, our mean consumption was reduced to 2·90 tons per ton of ingot. Our first set of coke ovens, consisting of 22 ovens, with a monthly capacity of producing from 1.500 to 1,800 tons, will, according to a recent telegram, be started to-day. The second set of 22 ovens will very probably be started at the end of next February. These two sets of coke ovens will ensure the necessary supply of fuel for the continual working of two water-jacket furnaces. Besides this, we have concluded with the Wankie Collieries a further contract for coke. We are now examining the question of further supplies of coke, either by the installation at Lubumbashi of further sets of coke ovens or else by a new agreement with the Wankie Collieries

WATER-JACKET FURNACES.

Our first water-jacket furnace, No. 2, was relit on June 4 last; it was extinguished on November 13, and will be relit in a few days' time—probably on December 5. Furnace No. 1, which was stopped on October 1 in consequence of the delay encountered in the completion of our coke ovens, was relit on November 15, and is now working uninterruptedly. As from December 5, most probably we shall again have two furnaces in simultaneous operation. These are the principal points of interest which I am able to mention to you; but another question which may be of greater interest still to shareholders is—

WHAT IS THE COST PRICE?

In our former reports we have approached this question with considerable prudence. It is always a delicate matter to give figures on which the future of the company may safely be based, since it is always exposed to a great number of unexpected events. Here, then, is all I can tell you. At the last general meeting, in December, 1912, I told you, with the usual reserve, that during the period from October to November, 1912, two months considered as the first two months of the industrial progress of the enterprise—our cost price per ton of copper might be estimated at 800 frs. at the works. I added that this cost price, which does not take into account the general expenses in Europe, the stoppages, or possible accidents, might be subject to an appreciable reduction by reason of: (1) The working of two ovens; (2) the employment of washed coke; (3) the briqueting of very fine ore; (4) the manufacture of coke in our own ovens at the works; (5) the normal and regular concentration of the ore by means of a definite installation for sorting and of washing plant. In the course of the year 1913 we realised the first three anticipated improvements. The fourth will be realised this very day by the coke ovens being started. As regards the fifth, we are still studying the very complex question of establishing a large concentrating plant operated by mechanical means and capable of treating every kind of ore. We are already preparing the ore mechanically by enrichment; but we have to consider the very complex problem of our different qualities of ore, which are very numerous on account of the very great number of our mines. The question, therefore, is being carefully examined, and will be solved as rapidly as possible. During the months of July, August and September the two furnaces have worked jointly with washed coke, with fine ore, the smelting charge being composed of ore from Kambove and Luushia; the average cost price per ton has been approximately 700 frs. on rail at the Star. The cost price at Antwerp is roughly 1,000 frs. per ton.

FUTURE AND DEVELOPMENT OF PRODUCTION.

We have every reason to hope that the year 1914 will see, together with a notable increase of our production, a further improvement in the matter of our cost price. After exceptional difficulties at the start of our industry, we have now, after long and serious efforts, reached the technical and industrial solution of the arduous problem which we were called upon to solve. Permit me on this occasion to express my appreciation of the zeal and devotion of our staff and, more especially, of our general manager in Africa (Mr. Horner) and of all his collaborators. The paramount question of producing copper at a profitable price having been solved, there now remains for us the task of developing our means of mining and metallurgical production, so as to get within the shortest possible delay the value out of all our concessions, and to remunerate to the greatest possible extent the large amounts of capital invested in the enterprise. To this end we are considering the installation of further furnaces, in order to increase our production to a very considerable extent.

Greig Diamonds.

We are authorised to state that a general meeting of shareholders in the company will be called some time next month to confirm the purchase of Schmidt's rich claims on Rietput—the consideration being 3,000 5s. reserve shares of the company, not to be paid until 60 days after the new gear is erected on his claims, plus 10 per cent. royalty; also to confirm the purchase of the piece of ground between the company's claims on the town lands of Schweizer Reneke and Schmidt's claims. The company will then have approximately 2,450 claims. The washing gear is working admirably, but the engine and pump will have to be replaced. They were second-hand when bought, and do not answer requirements. The gear is only working to a third of its capacity (some 150 loads per diem) and the gravel so far washed has produced diamonds at the rate of over £30 per 100 loads in value. Should this continue (and there is absolutely no reason why it should not) very large profits will be made. The property is opening up well, and the gravel is much thicker than originally anticipated. Some 6,000 loads are excavated, ready for washing, and owing to the great thickness of the gravel, the washing gear will easily be kept going when the second gear to be put up on Rietput ground is erected and working.

The Griffin Mine.

A correspondent writes:—"The Griffin Mine, Ledysdorp, is to shut down next month, and will possibly be let on tribute. The Griffin Mine is a twenty-stamp proposition, about eight miles south of Leydsdorp. It belongs, mostly, to Mr. D. M. Munro, of Pretoria, and has been crushing for the past three years."

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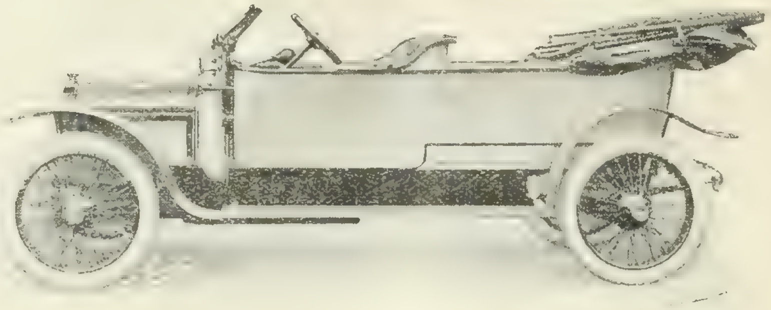

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Engineering Notes and News.

THE SAFETY OF WINDING ROPES.*

Preliminary Report of the Prussian Winding-Rope Commission.

The Prussian Winding-Rope Commission was appointed in 1905, for the purpose of devising uniform regulations with regard to the winding of men in the various mining districts, and also to investigate the general conditions for securing safety in winding. Each district was dealt with by a sub-committee of investigation, and special travelling committees were appointed to study the question in neighbouring countries. It is with the results of these inquiries that the present report deals.

One of the principal points examined was the safety of winding ropes, especially round-section ropes of steel wire, which form the chief type used in German mining; and the question to be settled in this connection comprised: fixing the data on which the safety factor should be determined; ascertaining the maximum working life of Koepe ropes; the behaviour in practice of ropes made of high-tensile steel; suitable tests for the quality and condition of steel ropes; and how the condition of a rope can reveal that its limit of service has been reached.

SAFETY FACTOR OF WINDING ROPES.

The committees are in general agreement that two safety factors must be taken into consideration—namely, for winding materials and men respectively—both being based on the maximum load to be supported by the rope. In the former case a factor of 6 is recommended. For winding men, the Dortmund and Bonn committees specify a minimum safety factor of 8; the Clausthal committee considers that the load when men are being wound should not exceed 50 per cent. of the load in winding materials; whilst the Halle committee proposes that, for a new rope, the safety factor in winding materials should be 8, if safety catches are provided, and 9 without these appliances, the corresponding figures for winding men being 10 and 12 respectively, and that the rope should be replaced when its safety factor for winding materials has decreased to 6 (7). For flat steel ropes these values should be increased by 1.25. The Bonn committee recommends for new ropes a safety factor of 9½ for winding men, and that the total load for this work should not exceed 90 per cent. of that in winding materials. Finally, the Breslau committee would reduce the factor to 7½ in deep mines, where it would be difficult to allow the factor to become so low as 6 for winding material and still retain 8 as the minimum for men.

In general, the committees do not think it necessary to increase the safety factor for new ropes, except for those used on Koepe pulleys, for which initial factors of 9½ and 8 are advised in view of the impossibility of shortening the ropes in order to ease the portions subjected to the greatest wear. It was also agreed that no increase in the factor should be required where tail ropes are used, since these prevent jolting and ensure more even running. To prevent overstrain due to the tail rope jamming or looping at the pit bottom, this rope could be made of weaker material than the main rope, so as to break first.

LIFE OF KOEPE ROPES.

As these ropes cannot be examined periodically by cutting off their ends, it is recommended that a limit should be placed on their period of service, two years being mentioned as the maximum (the Breslau regulations fix one year for flat Koepe ropes). The Bonn committee advises that the ropes should be taken off for examination every three or six months, whilst the Halle committee considers that the diameter of the Koepe and head pulleys should not be less than 120 times that of the rope, and that the angle of convergence of the rope between the head pulleys and the Koepe pulley should not exceed 1 deg.; further, that the cast steel wires in the rope should not have a higher breaking strength than 150 kilogs. per square millimetre. Statistics placed before the Commission showed that, out of 492 Koepe ropes discarded between the years 1905 and 1909 44 per cent. had been in use less than one year, 36 per cent. less than two years, and 20 per cent. more than two years, this unfavourable result being ascribed to the double strain on the rope as compared with those used in drum winding. The galvanising of Koepe ropes, to save greasing, lowers the breaking strength by about 9 per cent., the flexibility by 13 per cent., and the "give" under torsion by 50 per cent. Moreover, the breakage of a Koepe rope not only precipitates both cages to the pit bottom, but also results in serious damage caused by the loose, rising end of the rope itself; and in view of all these circumstances, the Commission decided to recommend two years as the limit of service, with a possibility of authorised extension in special cases.

WIRES OF HIGH TENSILE STRENGTH FOR WINDING ROPES.

This point was gone into on account of a regulation specifying that in determining the safety factor of a winding rope the calculation should be based on a breaking strength not exceeding 150 kilogs. per square millimetre (213,340 lb. per square inch) of the wire of which the rope is composed. Since this limit would entail the use of very thick and heavy ropes, to comply with the high safety factors prescribed by the regulations, the opinion of ropemakers was consulted, and it was found that they consider the limit might safely be increased to 200 kilogs. per square millimetre (284,450 lb. per square inch). According to particulars furnished by Messrs. Gessmann, of Herne, from tests made at the Graf Moltke II. shaft, ropes with a breaking strength of 145 kilogs. per square millimetre lasted 301 days and performed work equal to 101,520 ton-kilometres, whilst others, with a breaking strength of 175 kilogs. per square millimetre, ran for 1,107 days and raised 576,000 tons, the cost of the former per ton-kilometre being 34 marks, and of the latter 7.65 marks. Further tests have shown that the useful work done by the rope increases with its breaking strength. The local committee, however, does not regard steel of high tensile strength as the best material to use in all cases, one with greater ductility being preferable where the working conditions are unfavourable. In Breslau, however, wires with a breaking strength of 170 to 270 kilogrammes per square millimetre are more favourably regarded, owing to the increasing depth of the shafts and the necessity for reaching the prescribed factor of safety without making the ropes unwieldly. It is considered that with metal of good quality the increased fragility of the wires is only slight, whilst the diameter of the rope can be reduced, with advantage to the fatigue due to flexion. The Bonn committee considers it inadvisable, for the time being, to raise the limit above 180 kilogs., but the Halle committee is decidedly against any increase over 150 kilogs., owing to unfavourable experience with wires of higher breaking strength.

Evidence was laid before the Commission to the effect that, whilst the flexibility of high-tensile steel wires is low when bent through a very

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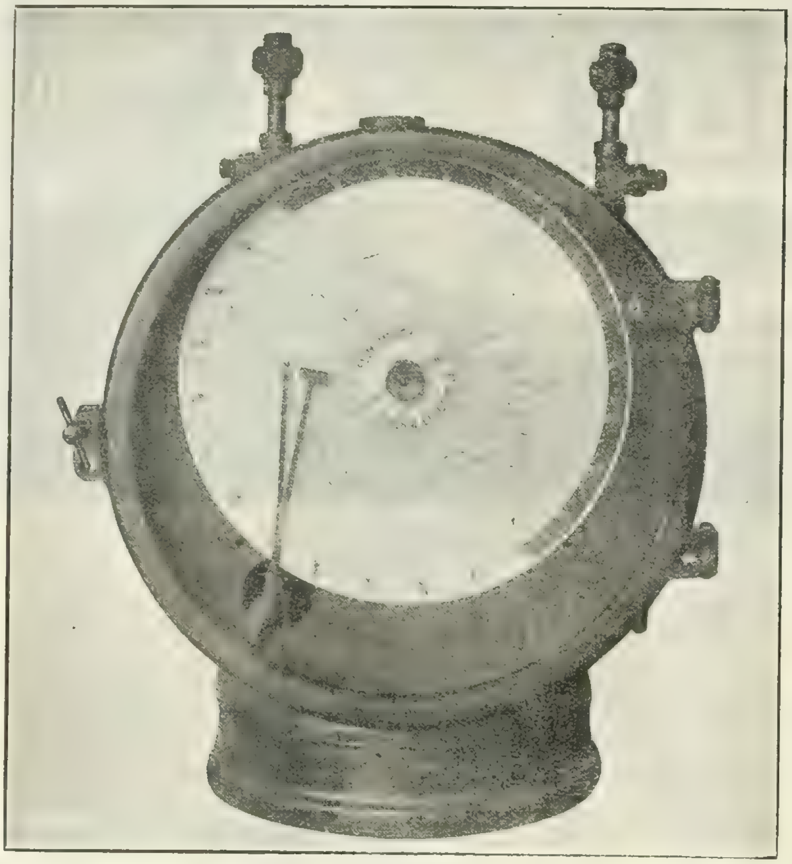
* Zeitschrift für Berg-, Hutten- und Salinenwesen.



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small radius, it increases with the tensile strength when the radius of curvature exceeds 1 in., and that while such wire is difficult to work, it is very suitable for ropes to be used in winding from great depths at high speeds and raising heavy loads. It was also stated that the rope pulleys should have a diameter not less than 100 times that of the rope. With regard to high-tensile steel for deep winding, it was pointed out that ropes with a breaking strength of 130 kilogs. cannot be used for depths beyond about 1,300 m., and that, although with a breaking strength of 150 kilogs., a depth of 1,500 m. can be attained, the weight of the rope is then 10 times as great as that of the load raised: whereas with a breaking strength of 180 kilogs. the weight is only three times that of the load, and on increasing the breaking strength to 200 kilogs. the weight falls to double that of the load. With regard to cost, for an equal weight of metal a rope made of wires having a breaking strength of 200 kilogs. is 50 per cent. dearer than one having a breaking strength of 150 kilogs.; but as the relative weight of the two ropes is only 1:5, the actual cost of the stronger rope is only three-tenths that of the other. The conclusion arrived at by the Commission was that there is no reason for restricting the breaking strength of rope wire to 150 kilogs. per square millimetre in calculating the safety factor, nor to impose any upper limit, in order not to retard progress.

TESTS FOR ROPE WIRES.

The main question before the Commission was to settle the number of successive bendings that a wire should be expected to stand, for the purpose of calculating the safety factor. In view of the conditions of practice, the Dortmund committee recommended traction, flexion, and torsion tests, more especially the last-named, as affording the best means of ascertaining the quality and homogeneity of the metal. Such torsion tests would, however, have to be restricted to new rope, because even a slight amount of wear, traces of rust or mechanical injury (nicking), may reduce the resistance to torsion to a single twisting, whereas these factors do not affect the breaking strength or flexibility. The breaking test should be applied to the whole section of the rope, and also to the separate strands, 10 per cent. of the wires being subjected to tensile strain, and, in the case of round wires, to flexion and torsion as well. As an alternative tensile test, all the wires, except those of the neutral zone, should be tested. The carrying strength of a wire should be determined by its breaking load. The flexion tests should be made with jaws 10 mm. in diameter, the wire being fixed at right-angles to the jaws and bent to the right and left alternately, through 180 degs. The number of bendings that naked wire, having a maximum breaking strength of 175 kilogs. per square millimetre (248,900 lb. per square inch), should stand without rupture is as follows, for the various sizes of wire specified, the corresponding values for wires of higher breaking strength, or galvanised, being given in parentheses:—Below 1.5 mm. diameter, 12 (11); 1.5 to 1.8 millimetres, 10 (9); 1.8 to 2.0 millimetres, 8 (7); 2.0 to 2.2 millimetres, 7 (6); 2.2. to 2.5 millimetres, 6 (5); 2.5 to 2.8 millimetres, 5 (4); over 2.8 mm., 4 (3). These data are the result of tests on 1,650 new wires, and are 30 per cent. below the mean values actually obtained. The torsion test should be performed by twisting a test piece, 200 m. long. of each wire around its own axis until it breaks. For the same breaking strengths as mentioned in the bending test, the wires should bear twisting the following number of times:—Wire less than 1.5 mm. in diameter, 33 (23) times; 1.5 to 1.8 millimetres, 30 (21) times; 1.8 to 2.0 millimetres, 26 (19); 2.0 to 2.2 millimetres, 24 (17); 2.2 to 2.5 millimetres, 22 (13); 2.5 to 2.8 millimetres, 16 (11); over 2.8 mm., 12 (9) times. These values are 30 per cent. less than the mean obtained with 1,650 wires. The carrying power of the rope is found by the sum of the breaking strengths of the individual wires, when the whole of these are tested; but in arriving at the total, all wires which have a breaking strength that is more than 20 per cent. below the mean result of the whole number of tests, and all those failing to pass the flexion and torsion tests must be eliminated. Ropes made of triangular or locker wires, in addition to having a hemp core, must be tested over the whole section, or, at least, by strands.

Electrical Winding Equipment for the East Rand.

The order for the electrical equipment of a large winding engine has been placed direct by the East Rand Proprietary Mines, Ltd., with the British Westinghouse Electric and Manufacturing Company, Ltd., Trafford Park, Manchester. The winder is capable of raising eight tons of ore from a vertical depth of 4,500 feet at a speed of from 2,200 to 2,500 feet per minute. The electrical equipment comprises two 1,500 b.h.p. 550 volts 33·4 revolutions per minute direct-current motors direct coupled to the winding drum, one on either side. These are supplied with current from a motor generator set operating on the Ward-Leonard system, and comprising a 4,200 b.h.p. three-phase, 25-periods 3,000 volts alternating-current motor direct coupled to two 1,375 kw. 550 volts direct-current generators, with a direct-coupled exciter for the generators and the winding motors. All the necessary control gear and switchgear are also being provided by the electrical contractors. Thirty-five other similar installations, comparable in size with the above, have been supplied by the British Westinghouse Electric and Manufacturing Company, Ltd., of which the following are a few examples: Six equipments for the Village Deep and City Deep, the winding motor for each equipment being of 3,400 maximum b.h.p.; three equipments for the Brakpan Mines, the winding motor for each equipment being rated at 3,000 maximum b.h.p.; one equipment for the Great Western Colliery Company, Ltd., South Wales, England, with two winding motors capable of a maximum of over 1,800 b.h.p. each. The winding drum in the East Rand installation, which runs at the speed of the driving motors, 33·4 revolutions per minute, is 12 to 21 feet in diameter, and 9 feet 3¾ inches long between the cheeks, and winds a rope 2 inches in diameter. The capacity of the winder is 160 tons per hour. The capacity of each winding motor has been increased to 1,900 horse power, and that of the motor driving the motor generator set, which runs at 490 revolutions per minute, to 5,000 horse power. The winding motors are shunt wound, connected in series with one another, and direct coupled to the drum shafts. The minimum output of the motor generator set is 1,375 kw. It will be noticed that the speed if the winder is very low; the tendency on winders at the present time is to increase the load per wind and reduce the speed; this is also the case with the Great Western winder mentioned previously, whose speed is 28·6 revolutions per minute. The brake and clutch engines are driven by compressed air supplied from a Westinghouse slip-ring motor-driven air compressor.

A Law to Regulate Pumping.

When a typical mine finally reaches a stage where deep explorations are necessary, says *The Mining and Scientific Press*, water is generally encountered, sometimes in sufficient quantities to make pumping a most serious item of expense. So long as pumps only drain the property in which they are situated, all goes well, but it often happens that, owing to the presence of numerous cracks and fissures, or the permeability of the rock itself, it is impossible to drain one mine without lowering the water-level in the mines immediately adjacent. This throws a most unjust burden on the pioneer company, for which at present it has no recourse, and it has either to stand the expense of draining all the surrounding territory or cut down its rate of development to the average of the mines about it. We need a drainage district law which will compel every one operating mines within a given district to bear their proper share of the expense of pumping.

Sakalava Madagascar Proprietary Oil Fields.

The secretary of the Sakalava Madagascar Proprietary Oil Fields, Ltd., writes:—We have received the following cable from our representative, Viscount L. Gessa-Desogus, dated Morondava, December 25: "Two hundred and fifty feet hard clay casing stops side flow; oil comes out nevertheless." The cable adds that our representative will be at Majunga on January 5 to arrange for transport of the 3,000 foot machine to the property.

Manicaland Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of November, 1913, was as follows:—Reef: Mill: Gold won (fine gold), 743 ozs. 11 dwts; tons crushed, 2,177; value, £3,122 16s. 6d. Concentrates (estimated): Gold (fine gold), 36 ozs. 4 dwts. 3 grs.; tons, 13·412; silver and lead value £45 17s. 8d. Cyanide: Gold recovered (fine gold), 14 ozs. 15 dwts. 5 grs.; tons treated, 90; value, £62.

Notice is given that His Excellency the Governor-General, under the powers vested in him by Section 5 of the Natal Mines Act, No. 43 of 1899, has been pleased to appoint the Receiver of Revenue, Durban, as an officer for the issue of new prospecting claim licences for Crown and Public Trust Lands in Natal.

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Finance, Commerce, and Industries.

"A.B.C." Year.

Cable advice has been received by the general manager of the African Banking Corporation, Ltd., that the directors propose to recommend to shareholders at the forthcoming yearly meeting the payment of a dividend at the rate of 8 per cent. per annum for the six months ended September 30 last, making, with the interim dividend of 8 per cent. per annum paid in June last, a dividend of 8 per cent. for the year. It is further proposed to place £25,000 to the reserve fund and to carry £2,500 to the staff guarantee and savings fund, leaving £21,200 to be carried forward to next account.

* * * *

Fraser & Chalmers, Ltd.

The report and accounts of Messrs. Fraser & Chalmers, Ltd., for the year ending June 30, 1913, show a net profit of £4,604, after payment of debenture interest, and after making the usual provision for depreciation, to which must be added £75,446 4s. 4d., being the credit balance brought forward from the preceding year, making a total of £80,050 4s. 6d. to the credit of profit and loss account. Out of this sum the directors have paid the full preference dividend for the year of £4,725, and have transferred a sum of £60,000 to a general reserve account, leaving a balance of £15,325 to be carried forward to the current year. The directors, in transferring to a reserve account so large a proportion of the balance heretofore carried in profit and loss account, explain that they have been guided by the consideration that the requirements of the business necessitated the permanent investment of more capital. There has also been added to general reserve an amount of £4,194 previously standing at the credit of capital reserve account. A sum of £1,998 has been applied in writing down patterns, drawing and patents to a nominal sum, and £100 in writing off the book values of the shares in the Allis Chalmers Co. The decrease in profits has been due to a continued falling off in the South African business. In England an increased trade has been done over that in the preceding year, but special expenses have been incurred owing to the changes in character of machinery sold. The company has now an established reputation for good work in turbines and turboblowers, in addition to mining machinery, and is developing other suitable lines of manufacture, which should increase the volume of business. The balance of the five per cent. registered debentures, amounting to £21,400, was redeemed on February 1, 1913. As notified to the shareholders by circular on March 11 last, a new issue of five per cent. debentures for a total of £100,000 has been created, and £50,000 of these debentures have been issued as collateral security for advances. The preference dividend of 7½ per cent. for the year was paid on July 26, and the directors do not recommend the payment of any dividend on the ordinary shares.

* * * *

Cape Bacon Curing.

The bacon factory at Wellington, although under good management and going fairly well, has been suffering from the want of a proper supply of pigs; and it is therefore interesting to learn that arrangements are being made for the shipment of a large consignment of pedigree pigs from England, which will go to form the nucleus of a pedigree herd and improve the existing stocks. This shipment will be followed by others of a like character; and in each case the pigs will be selected in England by Mr. Loudon M. Douglas, who designed the Wellington factory.

* * * *

The German East African Railways.

Germany is pursuing a systematic policy in the development of its colonies by means of railway construction, and substantial additions are constantly being made to its colonial railway system. In the estimates for German East Africa, which have just been published, the sum of £1,808,000 is provided for this purpose for the year 1914. There are at present two railways in this Colony, the Mittelland Railway, running westwards from Daressalam, which will reach Lake Tanganyika in the next few months, and the Usambara Railway from Tanga to Moschi. Of the above-mentioned sum, £708,000 is required for the completion of the Mittelland Railway, and £835,000 as the first instalment of a new line which will start from Tabora on the Mittelland Railway, and proceed in a north-westerly direction to the province of Ruanda. The total cost of this line will be £2,458,000, and its length will be 480 kiloms. The estimates further include the first instalment for the extension of the Usambara Railway from Moschi to Aruscha, a distance of 86 kiloms., and for the improvement of the existing line, amounting for the year to £265,000, the total cost being fixed at £462,000.

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Swaziland Progress.

In view of the interest centering at the moment in affairs in Swaziland, the annual report of Mr. R. T. Coryndon, the Resident Commissioner, is timely. The report covers the year ended the 31st March last, and it is notable for its reflection of complete placidity. Incidentally, the Commissioner remarks:—No happenings of political importance occurred during the year. The five year period of concurrent occupation of private land by Europeans and natives will expire on the 30th June, 1914. The natives are now realising that the partition of native reserves is an accomplished fact, and that, after June, 1914, they will have no rights on land owned by Europeans except in terms of agreements to be made with the latter. The prolonged drought was severely felt by both Europeans and natives. Owing to the demand for native labour on the mines of the Witwatersrand all able-bodied natives desiring work were able to obtain it. 4.960 natives were recruited by labour agents and 3,360 passes were issued to natives proceeding to seek for work outside of Swaziland. The local demands were also met. Interest in cattle ranching is becoming marked, and there is reason to think that this industry will become a large factor in the future development of Swaziland, especially the low veld portion, which is particularly suitable for the purpose. Progress has been slow under the special circumstances which have obtained in the past, and while there is, to-day, no large amount of progress to be reported, the outlook is probably more hopeful than it has been at any other time in the history of the territory. The year's working showed a surplus of £2,218, and the revenue included £6,955 from the sale of Crown lands and mineral areas. The total revenue for the year was £58,436, the ordinary revenue showing a handsome increase. There were no receipts from the gold profits tax. On the other side of the ledger is a decreased expenditure over the previous year, although the ordinary expenditure is steadily increasing. Expropriation of land is responsible for a decrease of £5,345, and conversions form a decrease of £3,012. The gold output for the year was 13,010 ounces of fine gold, valued at £55,265; while the tin export was 385 tons of casseleite valued at £37,946. For the third year in succession the crops were a failure in many parts of the territory and they were good nowhere. This was due to want of rain at the proper time. Adequate rains fell in the spring of 1912 and good crops throughout were the result for this year of 1913. The Government allotted a further number of small holdings to European farmers. No agricultural farming on a large scale has yet been attempted, but there appears to be no reason why it should not succeed, given an accessible market.

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The Rhodesian Research Company, Ltd., is calling a special general meeting to consider the question of voluntary liquidation.

INVESTORS' DIARY.

Jan. 23.—Witbank Colliery.

THE WEEK IN THE SHAREMARKET.

Holiday Feeling Restricts Business—Quiet and Featureless.

Very little business was put through this week, and the market remains very quiet. The tone in London at the beginning of the week was bullish and dividend-paying Rand stocks were in some demand. The more speculative counters are inactive.

* * * *

	Tues., 23rd.	Wed., 24th.	Sat., 27th.	Mon., 29th.	Tues., 30th.	Wed., 31st.
Adair-Ushers	—	—	—	—	0 9†	—
African Farms	15 0	14 9*	—	14 9*	14 9	14 6*
Apex Mines	19 0*	18 9*	—	—	18 0*	18 6*
Bantjes Consolidated	14 3*	13 6	—	—	14 3*	15 0†
Benoni Consolidated	—	1 10*	—	2 3†	2 0*	2 2†
Brakpan Mines	49 0*	—	—	50 0†	49 6*	—
Breyten Collieries	30 0†	—	—	—	30 0†	30 0†
British South Africa	18 0*	—	—	—	20 0†	20 0†
Bushveld Tins	0 6	0 6*	—	0 6*	0 6*	0 7†
Cinderella Cons.	3 0*	—	—	2 3*	2 3*	—
City and Suburbans	48 0	47 6*	—	47 7†	46 3*	46 6*
City Deeps	—	—	—	—	54 3*	54 0*
Cloverfield Mines	4 3*	4 3	—	4 1*	4 2*	4 1*
Clydesdale Collieries	—	9 0†	—	9 0†	—	9 0†
Cons. Investments	—	—	—	—	18 6*	18 0*
Cons. Langlaagtes	—	—	—	—	29 3	29 9
Cons. Main Reefs	17 0	17 0*	—	17 3	17 6*	17 6*
Cons. Mines Selection	7 0*	—	—	7 0*	7 0*	7 0*
Coronation Collieries	—	—	—	12 6*	12 6*	12 6*
Coronation Freeholds	0 5*	0 5*	—	0 5*	0 5*	0 5*
Crown Diamonds	7 9*	8 0*	—	8 0	7 9*	8 0*
Crown Mines	—	—	—	—	123 9*	—
Doornhoek Tins	—	6 0†	—	6 0†	—	6 0†
East Rand Centrals	8 0*	8 0*	—	8 0*	8 0*	8 0*
East Rand Coals	1 10*	1 10*	—	1 10*	1 10*	1 10*
East Rand Deeps	1 3	1 3*	—	1 3*	1 3*	1 3*
East Rand Props.	40 0*	40 6*	—	—	42 0*	41 0*
East Rand Debentures	£87½†	£85*	—	£84*	£87½†	£87½†
Eastern Gold Mines	1 0*	1 0*	—	1 0*	1 0*	1 1
Frank Smith Diamonds	6 10*	6 6*	—	6 6	6 4	6 0*
Geduld Props.	—	21 0*	—	21 6*	21 9*	21 6*
Glencairn Main Reefs	3 3*	—	—	—	3 3*	—
Glencoe (Natal) Collieries	—	—	—	7 0*	—	—
Glynn's Lydenburgs	12 6†	12 0†	—	12 0†	12 0†	10 0*
Government Areas	17 9*	17 9	—	17 9	18 3	18 3
Jumpers	—	—	—	1 9*	—	-
Jupiters	4 0*	4 0*	—	4 0*	4 3*	4 3*
Kaalfontein Diamonds	0 6	0 5*	—	0 5*	0 6	0 6
Klerksdorp Props.	1 11*	1 11*	—	1 11	1 11*	1 11*
Knight Centrals	7 3*	7 3	—	7 4	7 3*	7 3
Knights Deeps	—	—	—	—	27 6*	—
Lace Props.	2 6	—	—	2 6*	2 6*	2 6*
Luipaardsvlei Estates	9 0*	10 0	—	—	10 0†	10 0†
Lydenburg Gold Farms	2 9*	2 9*	—	—	2 9*	—
Main Reef Wests	6 3*	6 0*	—	6 3*	6 3*	6 0*
Middlevlei Estates	1 0*	0 10*	—	1 0*	1 0*	1 0
Modderfontein B.	81 0*	81 3*	—	81 0*	82 6*	82 0*
Modderfontein Deeps	37 6*	38 9	—	38 3*	38 3*	38 0
New Boksburgs	0 9*	0 9*	—	—	0 10*	1 0†
New Eland Diamonds	26 6*	26 6*	—	27 0*	27 0*	—
New Era Cons.	5 6*	5 9*	—	5 6*	6 0*	6 0
New Geduld Deeps	1 9*	1 9*	—	1 9*	1 9*	—
New Kleinfonteins	23 3*	23 0	—	22 6*	22 9	22 0*
New Modderfonteins	235 0*	240 0†	—	—	235 0*	—
New Rietfonteins	—	—	—	—	3 6*	-
New Unifieds	—	—	—	—	14 6†	
Nigels	—	—	—	—	20 0†	—
Orange Diamonds	1 7*	1 9	—	1 7*	1 9*	2 0†
Piggs Peaks	9 0*	9 0*	—	9 0*	—	—
Pretoria Cements	47 0†	—	—	45 0*	45 0*	45 0*
Princess Estates	—	6 0†	—	—	—	—
Rand Klips	2 0*	2 0*	—	2 2	2 0*	2 0*
Rand Nucleus	1 6*	1 9†	—	—	1 6*	1 6*
Randfontein Deeps	—	—	—	—	2 9*	2 6*
Randfontein Estates	—	23 0*	—	—	23 3*	23 0*
Roberts Victors	30 0*	29 6*	—	30 0*	30 0*	30 0*
Robinson Deeps	30 0*	30 6	—	—	30 6*	—
Rooiberg Minerals	—	—	—	26 0†	25 6*	25 9*
Rood. Durban Deeps	—	18 3*	—	—	—	—
Ryan Nigels	3 0*	3 0*	—	—	3 0*	—
Shebas	5 0*	5 0*	—	5 0*	5 3*	5 6
Simmer Deeps	1 3*	1 0*	—	1 0*	2 0*	—
S.A. Breweries	—	—	—	39 0*	40 0†	—
S.A. Lands	2 10*	2 10*	—	2 10	2 10*	2 10
Springs Mines	11 0*	10 9*	—	11 0*	11 9	12 [illegible]
Sub Nigels	8 0*	8 3*	—	8 6	8 3*	—
Swaziland Tins	—	—	—	44 0†	44 0†	44 0†
Transvaal and Delagoa	—	40 0*	—	40 0*	—	40 0*
Transvaal Coal Trust	30 0	30 0*	—	30 6	30 6*	30 6*
Transvaal Cons. Lands	19 0*	19 0*	—	19 0*	19 6*	19 0*
Transvaal G.M. Estates	—	—	—	—	—	47 0*
Van Ryn Deeps	35 9*	36 3	—	36 0*	36 9	36 3
Village Deeps	35 0*	—	—	—	34 0*	—
Village Main Reefs	—	—	—	—	37 6*	37 6*
Vogelstruis Cons. Deeps	—	0 6*	—	0 6*	—	0 6*
Witbank Collieries	-	41 6	—	—	—	—
Witwatersrands	69 0*	69 6*	—	72 0*	73 6*	72 6*
Witwatersrand Deeps	56 0*	56 0*	—	56 6*	56 9*	57 0
Wolhuters	12 3*	12 3*		—	12 0*	12 6*
Zaaiplaats Tins	31 0	31 6	—	30 0*	31 6	31 6

*Buyers. †Sellers.

Roberts Victor Diamonds.

An alteration in the area of the Roberts Victor Diamond Mine, in the Orange Free State, is notified in the last *Government Gazette.* The mine is situated on the farm "Damplaats," in the district of Boshof, and a re-survey has disclosed the fact that the diamondiferous area occupies 118,890 square feet. The mine has accordingly been delimited afresh in order to meet the requirements of the new survey. Another mine on the same farm has also undergone revision. Continued development has resulted in the discovery of further extensions amounting in all to 53,010 square feet. The plan has now been altered to embrace this additional area.

Cassel Coal.

The following cable was this week forwarded to this company's London office:—"In view of the fact that we are expending about £60,000 in the development and equipment of the new mine, the board of directors have decided to declare a five per cent. dividend, payable to shareholders registered at the close of business on December 31. The new mine is opening out well, and ought to be producing coal by the end of March."

Increases of Capital.

Sandbult Diamond Syndicate, Ltd., Johannesburg; capital increased from £12.000 to £14,800.

Colox Paint Company, Ltd., Johannesburg; capital increased from £6,000 to £7,000.

William Barker, Ltd., Johannesburg; capital increased from £250 to £2,250.

THE SOUTH AFRICAN SCHOOL OF MINES AND TECHNOLOGY.

Department of Mining and Surveying.

Applications are invited for the position of Assistant to the Professor of Mining and Surveying. Duties to begin 1st March, 1914. Salary £40 per month, rising by two annual increments of £5 to £50 per month. The work includes both day and evening lectures with fieldwork.

Applications, accompanied by a medical certificate of good health, should be sent, with copies of testimonials (which will not be returned), stating age, professional training and experience, to reach the undersigned, P.O. Box 1176, Johannesburg, not later than January 24th, 1914.

GEO. S. CORSTORPHINE,
Principal.

NOVEMBER GRADE, COSTS AND PROFITS.

Chamber of Mines' Analysis.

THE following tabulation of the operations of the mines of the Transvaal contributing to the gold production is supplementary to the details published by the Chamber of Mines in its declaration on the 10th of the month:—

THE WITWATERSRAND.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d
1. Aurora West United ...	18,439	25	0	20	3	14,065	4,382	6	4
2. Bantjes Consolidated ...	27,037	26	3	23	3	23,990	2,698	2	7
3. Brakpan Mines	61,936	26	8	19	2	43,878	17,486	7	8
4. City Deep	70,776	38	6	26	2	46.831	21,599	12	1
5. City and Suburban ...	46,428	37	7	21	7	26,693	19,167	15	6
6. Cons. Langlaagte	56.465	27	7	17	10	35,233	20.373	10	3
7. Cons. Main Reef	29.840	32	8	22	5	20.438	9.138	10	0
8. Crown Mines	241,849	29	6	16	0	131,466	107,678	13	2
9. Durban Roodepoort ...	15.084	21	7	15	10	11,052	4.033	5	9
10. Durban Rood. Deep ...	30.788	27	1	24	1	27,334	3.134	2	9
11. East Rand Proprietary.	218.601	32	8	20	11	135,079	74,536	11	7
12. Ferreira Deep	99.460	37	5	17	9	46,855	51,115	19	4
13. Geduld Proprietary	27.988	29	6	22	11	21,745	6.176	6	6
14. Geldenhuis Deep	62,807	28	6	25	2	55.090	6.926	3	2
15. Ginsberg	19,425	24	5	18	2	13.802	5.404	7	2
16. Glencairn Main Reef ...	14,497	14	6	12	6	11,767	1.924	2	0
17. Knight Central ...	24.735	24	9	21	4	21.339	3.082	3	1
18. Knights Deep ...	68.686	16	3	12	1	50.525	16.719	4	0
19. Langlaagte Estate .	57.251	19	8	17	5	43.226	13.072	5	3
20. Luipaardsvlei Estate ...	18,461	21	3	18	1	15,704	2,542	2	11
21. Main Reef West	24,582	28	11	23	5	19,902	4.388	5	2
22. May Consolidated	10.178	16	3	14	4	8,942	1,213	1	11
23. Meyer and Charlton ...	36.186	49	3	17	2	12,554	23.591	32	3
24. Modderfontein B. .	62,208	37	8	16	5	27,020	34.416	20	10
25. New Goch	30.291	20	11	15	10	22.768	7.490	5	3
26. New Heriot	10.649	36	9	44	4	11,956	*1,336	*4	11
27. New Kleinfontein . .	63.155	25	9	16	9	40.689	21.728	9	0
28. New Modderfontein . .	76,374	37	8	17	1	34,648	40,961	20	2
29. New Primrose ...	32,712	27	1	13	3	15,730	16,412	13	10
30. New Rietfontein . .	14,846	20	9	20	6	14,642	204	0	3
31. New Unified	15,394	24	8	16	7	10,173	4,945	8	1
32. Nourse Mines	62.667	29	2	22	4	48.064	13,915	6	6
33. Princess Estate . . .	27,644	25	10	24	5	26,145	1.433	1	4
34. Randfontein Central ..	237,949	25	6	17	11	165,528	70,008	7	7
35. Robinson	92,371	35	7	14	11	38.403	52,156	20	4
36. Robinson Deep	64,379	28	0	17	2	39,392	26,004	11	4
37. Roodepoort United ...	21.209	18	0	17	8	20,909	318	0	3
38. Rose Deep	80.915	25	3	15	10	50,020	29,784	9	5
39. Simmer and Jack ...	72.088	21	6	11	9	39,409	29,647	8	10
40. Simmer Deep	42,426	15	3	15	1	41,962	341	0	2
41. Spes Bona Tribute† ...	3,938	15	9	—		—	—	—	
42. Van Ryn Estate	53,955	27	9	15	6	29,723	24,202	12	8
43. Van Ryn Deep	57,727	33	9	18	11	32,384	25,344	14	10
44. Village Deep	64,060	29	11	21	0	44,929	18,371	8	7
45. Village Main Reef ...	59,235	36	9	19	4	30,643	26,865	17	0
46. Vogelstruis Estate... ...	13,801	21	3	19	5	12,192	1,635	2	7
47. West Rand Central ...	3,883	39	8	30	7	2,952	931	9	6
48. West Rand Cons.... ...	25,142	24	10	21	10	21,961	3,191	3	2
49. Witwatersrand	49,015	25	7	14	5	27,659	21,355	11	2
50. Wit. Deep	64,221	27	9	15	10	36,582	27,115	11	8
51. Wolhuter	40,770	26	11	18	0	26,959	13,329	8	11
Miscellaneous producers	12,374	—		—		—	—	—	
Witwatersrand totals ...	2,736,897	27	6	17	11	1750952	931140	9	7
*Loss. †Private.				50 cos.		50 cos.	50 cos.	50 cos.	

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by-products.

OUTSIDE DISTRICTS.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
HEIDELBERG—									
1. Nigel	18,368	28	8	23	7	15.113	3,044	4	9
2. Sub Nigel	8,602	36	5	29	7	6,975	1,515	6	5
BARBERTON—									
3. Barrett	726	6	10	—		—	—	—	
4. Sheba	14,171	48	3	33	7	9,846	4,327	14	9
5. Worcester	4,549	20	3	15	0	3,363	1,178	5	3
KLERKSDORP—									
6. Quest	2,782	16	5	12	10	2,181	602	3	7
LYDENBURG—									
7. Ceylon Lydenburg ...	986	33	3	19	5	576	419	14	2
8. Glynn's Lydenburg ...	7,820	43	9	18	2	3,242	4,820	27	0
9. Transvaal G.M. Estates	39,066	58	6	22	4	14,932	23.578	35	4
Miscellaneous producers	26 826	—		—		—	—	—	
Total (outside districts)	123,891	38	1	23	0	56,228	39.483	16	2
				8 cos		8 cos.	8 cos.	8 cos.	
Grand totals	2860788	27	9	18	1	1807180	970623	9	8
				58 cos.		58 cos.	58 cos.	58 cos.	

A comparison of values recovered per ton milled, working costs and profits per ton with October shows that the value recovered on the Witwatersrand for November was 27s. 6d., the same as for October. Working costs in November were 17s. 11d.; in October 17s. 9d.; in September 17s. 10d.; in August 17s. 7d.; in July 19s. 4d.; in June 17s. 8d.; in May 17s. 7d.; in April 17s. 11d.; in March 17s. 8d.; in February 18s. 3d.; and for both January and December 18s.

For January the tonnage milled was 2,296,948 tons; for February, 2,100,137 tons; for March, 2,321,254 tons; for April, 2,301,099 tons; for May, 2,366,726 tons; for June, 2,177,354 tons; for July, 1,873,980 tons; for August, 2,162,807 tons; for September, 2,035,318 tons; for October, 2,073,909 tons; and now for November, 1,995,573 tons. In the outside districts the total tonnage milled was 50,934, making a total for the Transvaal of 2,006,507 tons.

The total dividends declared for 1913 to date are: Witwatersrand, £4,607,638; outside, £349,924; total, £4,957,562.

The total dividends declared for 1913 to date are: Witwatersrand, £4,548,638; outside, £349,924; total, £4,498,562.

Water Finding.

Despite the dubious results of the experiments carried out some months ago by the Académie des Sciences with the divining rod in the hands of professionals, that body continues to interest itself in a problem that is supposed to offer serious grounds for scientific investigation. So great is the importance of utilising every available source of water supply in dry countries that the claims of the water finder are worth taking into account, if it be proved that the proportion of his successes is sufficiently high to raise them above the level of mere guesswork. During the month Professor d'Arsevan presented to the Académie des Sciences the results obtained in Tunis by Dr. Marage, who sought the aid of engineers and scientists, amongst whom he found that about one in ten possessed the psycho-physiological faculty for more or less accurately indicating underground sources of water. The first experiment carried out in Tunis, near Enfidavilla, was by M. Landesque, when the divining rod proved a failure. It was subsequently replaced by a pendulum consisting of a small cone suspended from the end of a thread, when M. Landesque indicated nine places where water was to be found, and borings revealed water at the depths stated, except in two cases, the depth in one case being 23 m., instead of 13 m., and in the other 3 m., instead of 18 m. The fact that there does not appear to have been any failure to find water with the pendulum in the hands of M. Landesque is regarded by Dr. Marage as highly significant, and he states that the experiments are to be continued by the engineers of the Pontes et Chaussées in the African Colonies, where indiscriminate boring for water is extremely costly.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

The Week's Company Meetings.

ROMOLA NIGEL.

Annual Meeting.

The annual general meeting of shareholders of the Romola Nigel Gold Mining Company, Ltd., was held at the company's offices, in Exploration Buildings on Dec. 29, Colonel J. Donaldson presiding. There were also present Messrs. C. L. Andersson, E. J. Sievwright, S. Lissack, and J. A. Liljestram. A share capital of £4,380 2s. was represented out of a total issued capital of £14,873 1s. The Chairman read the directors' report as follows:

Chairman's Remarks.

Gentlemen,—The accounts now presented are in respect of the year from July, 1912, to the 30th of June, 1913. In accordance with the resolutions of the shareholders' meetings held on the 21st of April and the 6th of May, the capital of the company was reduced to one-fifth of what it then stood at by altering the demonination of its shares from 5s. to 1s. each, and instead of £37,575 capital issued, in 150,300 shares of 5s. each, it now stands at £7,515 in 150,300 shares of 1s. each with £42,485 in reserve, of which £2,700 is under option at par to shareholders till the 6th of May, 1914, in terms of the above-mentioned resolutions and may be utilised when opportunity offers to raise adequate funds to develop and equip the company's mines. A schedule is attached to the accounts showing the manner in which the assets of the company were written down by £30,060 to correspond with the reduction of capital. The debenture issue remains unaltered at £24,425 issued and £3,000 unissued. The premium on shares and debentures shown in the last balance sheet has been carried to the credit of profit and loss account.

Sundry creditors amount to £7,097 16s., made up as follows: £964 8s., received from applicants for new shares which had not been allotted on the 30th of June; £4,411 3s., advanced by directors on the security of the £3,000 unissued debentures. They relinquished their lien and applied for shares at par in settlement; £943 10s. 9d., for debenture interest to the 30th of June, 1913; £778 14s. 3d., for sundry accounts, since paid.

Nigel Claims.

After unsuccessfully endeavouring to sell or dispose of your Nigel claims in any way, and as they cost the company £24 per month in licences. It was decided to abandon these claims. They are now open ground for pegging. The book value of the Rhodesian claims has been reduced by £6,418 4s. 5d., as shown in the schedule attached to the balance sheet. Mine equipment has also been liberally reduced as well as livestock, and they stand in your books to-day at what your directors think considerably below their real value. If you compare the last balance sheet with the present one, you will note development, main shafts, and prospecting have been entirely written off capital, after debiting them with £1,727 3s. 6d. expenditure incurred during the year. Investment account was credited £186 6s. 6d., the proceeds of the forced sale of your Waterberg farm, and the balance, £1,178 8s. 1d., has been transferred to profit and loss account.

Working expenditure and revenue account shows that £2,639 11s. 9d. was expended for a recovery of £1,711 14s. 7d. Crushing ceased in September, 1912, and the loss under this heading has been transferred to profit and loss account. It must, however, be remembered that while the battery was closed down we still had to look after the property, and expenditure for nine months still went on, though on a much smaller scale.

The profit and loss account was brought forward last year in debit £1,003 2s. 5d., and the difference between all charges to it since then as specified, and premium on share account with which it has been credited, effects a reduction of £516 0s. 6d., and the balance, £487 1s. 11d., has been written off capital account. As was indicated in the directors' report accompanying your last balance sheet, and by the chairman at the annual meeting held on the 19th of November, 1912, various efforts have been made to deal profitably with one or more of your properties; it is regretted these efforts have been unsuccessful. Shareholders were called together on the 21st of April, 1913, to consider proposals for the reconstruction of the company and for the raising of further capital to carry out the manager's suggested development scheme. The proposals submitted were adopted by the shareholders, and confirmed at a further meeting on the 6th of May. All registered shareholders were advised by circular of the reconstruction scheme and subscriptions were invited. The principal creditors of the company agreed to relinquish their lien over the company's unissued debentures and to take payment in the company's shares; £4,250 was agreed to be treated in this way. Many other promises of support to the scheme were given, but the greater part of these were not fulfilled. Applications for £5,375 11s.—including £4,411 from creditors—were received, and a few days after the 30th of June allotments in accordance with these applications were made

Value of Properties.

It is a matter for regret that applications were so few, because the resulting funds were inadequate to allow of even a start being made on development. Your manager, a mining man of high qualifications, is so impressed with the value of your properties, and so desirous of being associated professionally with them when they realise the future he predicts for them, that when work was stopped he consented to remain in charge for very inadequate remuneration, and your board wish to express their high appreciation of his loyalty and services. It was thought that an independent engineer's report, if the funds to get one could be secured, would facilitate raising capital from other sources for the development of your properties. Your chairman agreed to subscribe £300 in debentures to put the company in a position, without trenching on its limited funds, to secure a report from Dr. H. Merensky, with whom arrangements were made to visit, examine, and report on your properties. As a result of his report, which was a most favourable one, negotiations were proceeding by which it was hoped to secure £12,500 to carry out his development recommendations, which are practically what your manager previously advised. These negotiations were being carried on with a fair chance of success when the industrial troubles of July put an abrupt termination to them, and it has not been possible yet to arrange this matter.

In the circular inviting subscriptions for further capital, it was mentioned that the directors had secured without cost the right to buy for £1,000 two blocks situated close to your other properties, which were known as the "Star" blocks. These blocks were of such promise that your board was very loth to miss the opportunity of acquiring them, especially as Dr. Merensky advised almost any sacrifice being made to secure them at that price. They were finally bought for £250 in cash and £800 in the company's shares, instead of £1,000 in cash. A small amount of work was carried out on them resulting in the opening out and raising of some valuable ore. When the company was quite without money, your manager, being positive the ore already on the surface would yield well, was authorised to crush and has done so on day shift since the early part of October.

Satisfactory Results.

The results are eminently satisfactory, a profit of £856 15s. 2d., having been realised in crushing during October and November, 632 tons being crushed from development and surface rubble, the rejected quartz of the ancients. It is estimated that the proportion of development rock yielded over the plates about an ounce of gold per ton. The sands and slimes are stored for future treatment. The actual gold return was £1,475 11s. and the cost of mining, transport, milling, and all charges £618 15s. 9d. Since the 30th of June £300 of debentures have been allotted, as above mentioned, and further 39,650 shares and £350 debentures have been applied for at par, bringing your issued share capital to a total of £14,873 1s., which enabled your directors to settle all outstanding debts including the purchase of the Star Blocks and debenture interest to the 7th of November, 1913, without trenching much on the profits of the Star.

Your directors have accepted an offer to develop the Star blocks by which the developers undertake to spend £2,500 on development only, they having the right for a year to float these two blocks into a separate company with a cash capital of at least £10,000 and a total capital of £50,000 of which this company will receive £20,000 in shares. The developers have the right to use the company's mill and to crush the rock hauled in the development process, but they may not mine or stope any ore. Had the company been in a good cash position it is not probable this offer would have been accepted, but in its present position your directors think the bargain is a fair one.

Position To-Day.

Your position as a company to-day is much more favourable than at the last annual meeting. Your creditors have all been fully satisfied. You own another important property. You have free for your purposes £2,350 debentures which were under a lien last year. You have in the bank sufficient to do all the work required to maintain the title of your properties for a further year. Your capital is much reduced. This reduction, though deplorable for those shareholders who were unable to follow up their proportion in the reconstruction, yet should make it easier to secure further capital for your requirements. Your properties are as good as they were last year, in fact the work done on Eastern Queen makes it more valuable.

The report was adopted without discussion. Mr. S. Lissack and Mr. W. Ross were re-elected as directors, while Mr. D. Rintoul was re-elected as auditor.

The meeting concluded with the usual votes of thanks.

EAST RAND CENTRAL, LTD.

Cash Assets Distribution.

Necessary Resolutions Adopted.

At an extraordinary general meeting of the shareholders of the East Rand Central Mines, Ltd., which was held on Dec. 29, there was present a share representation of 82,299 shares out of a total issued capital of 151,340 shares.

Chairman's Speech.]

Mr. A. A. Osborne presided, and said: On various occasions in recent years representations have been made to your board as to the desirability of distributing to shareholders a portion of the company's cash assets in preference to keeping it on fixed deposit with the banks at a low rate of interest. Such a policy has hitherto been impracticable for the reason that the greater portion of our cash has been locked up under a clause in the agreement between the Government and your company. That clause has now been cancelled by mutual consent, though the agreement stands in other respects, and consequently the necessity for keeping our cash resources in hand for this purpose no longer exists. Your board has therefore decided to recommend the return to shareholders of 7s. per share. The proposed distribution amounts to £52,969, and if the resolution before you is adopted the company will still retain about £7,700 in actual cash, equal to over 1s. per share in addition to other assets which will be converted into cash as opportunity offers, besides your 424 claims on Schapenrust. This is after allowing for the expenses of distribution. It is intended to reduce administration expenses so that the funds remaining will be sufficient to protect your claim area for many years to come. If however, as your board trusts will be the case the Brakpan-Schapenrust property is floated within a reasonable time then the greater part of the cash and cash assets referred to should become available for distribution to shareholders at a later date. The distribution of 7s. a share naturally involves writing down the company's capital by a corresponding amount. The resolution which I shall presently move, provides for this and also for reducing the capital by a further 3s. per share to allow of the writing off of assets which have ceased to be available. It is proposed to effect the reduction of capital by reducing the denomination of the shares from £1 to 10s., thus bringing the issued capital down to £75,670, which figure to the best of the board's information will fairly represent the value of the assets remaining after 7s. per share has been distributed.

Resolutions moved by the Chairman, and necessary for carrying out the proposals outlined in his speech, were adopted.

KAALFONTEIN DIAMONDS.

Annual Meeting.

Presiding, on December 29, over the annual meeting of the Kaalfontein Diamond Mines, Ltd., held in Exploration Building, Colonel J. Donaldson said : As authorised by shareholders in general meeting on April 21, your farm was sold, and the loss on it has been debited to profit and loss account. The Madagascar Oil Development Co. allowed the option they held through the Ankavandra Oil Co., Ltd., over the Taylor-Coryell Syndicate property in Madagascar to lapse, and as they have no other assets the cost of your holding in that company has been written off, and as now the Ankavandra Oil Co. has no assets except a claim for Madagascar Oil Co. shares sold by the London Pool Committee, which may or may not be paid, your holding in that company has been written down to £60. Your directors, guided by the wishes expressed by shareholders, have invested in Madagascar the whole of the company's available funds, after repaying the amount borrowed on your portion of the farm Kaalfontein. You now hold approximately one-quarter of the entire capital of the Taylor-Coryell Madagascar Petroleum Syndicate, and 200 shares in the Franco-Colonial Syndicate. The Taylor-Coryell investment is subject to a charge of 25 per cent. of its profits. The Taylor-Coryell Syndicate's issued capital is 350 shares of £10 each. They have the concession over 130 square miles of country, which was the first ground selected in Madagascar for oil. The Sakalava Oil Co., Ltd., have ground adjoining them on two sides. Till lately the only boring for oil done in Madagascar was on the Taylor-Coryell ground. Two holes were put down to a depth of 800 and 1,300 feet respectively, in both of which oil was found. The Taylor-Coryell Syndicate also now own two complete percussion drilling plants, with transport plant for both land and river conveyance, as well as an outfit for casing, tools, etc., which cost over £8,000 to land on their property. They are negotiating now with good prospects of success for the provision of £25,000 for a half interest in their syndicate, a sum which it is thought will be quite ample to bring their syndicate to an oil-producing stage. It was thought better to put the funds into the ground floor of this promising oilfield, in options over which, through your holding in Ankavandra and Madagascar, you had lost so much money. Instead of your holding about one-eighth interest in an option as previously, you now hold considerably over one-quarter interest in the ownership of the same concession and also in their tools.

The report of the directors was adopted, and Colonel Donaldson, Messrs. M. Epstein, E. J. C. Bright, and H. F. Head were re-elected directors.

O.F.S. AND TRANSVAAL DIAMONDS.

Annual Meeting.

Presiding, on December 29, at Mayfair over the annual meeting of the O.F.S. and Transvaal Diamonds, Mr. James H. Crosby stated that the directors had been endeavouring to obtain the funds necessary to resume work on the property, and with this object in view had approached the chairman to discuss the terms on which the required money might be raised. All he was able to tell them at the moment is that Sir Joseph Robinson had still under consideration the question of advancing the company the cash to develop the mine at greater depth, and to floor and allow to pulverise sufficient ground to enable a thorough test of the value of the mine to be made. Doubtless the matter would have been settled ere this had not Sir Joseph Robinson been detained in England, but on his arrival here it was his intention to proceed to the mine and investigate the position. He expected, therefore, at a later date to be able to lay before shareholders a definite statement of the future policy of the company.

ANKAVANDRA OIL CO.

Annual General Meeting.

Colonel J. Donaldson presided, on December 29, over the annual meeting of the Ankavandra Oil Co., Ltd., held in Exploration Building. In their report the directors said : Your capital remains as in last year's balance sheet, £30,000. Sundry creditors represent the amount due to the secretary and for directors' fees, which there are no funds at present to pay. Your assets are 927 Madagascar Oil Co. shares, which have no value; £7 9s. 1d. in cash, and a claim against the members of the Pool Committee, who still fail to settle up the joint transaction. In connection with this your directors have placed the matter of the clearing up of this account in the hands of Messrs. C. L. Andersson and Co., London branch, who so far have not had much satisfaction. Your directors think we are entitled to about £600, but it is impossible to say what may be realised. The option over the Taylor-Coryell ground was allowed to lapse by the Madagascar Oil Development Co., and as it exists no longer its book value was transferred to the debit of profit and loss, together with your general administration expenses, and this account now stands at £29,198 19s. 11d. in debit.

The report was adopted. Colonel J. Donaldson was re-elected director, and Mr. Hargreaves was appointed in place of Mr. D. Rintoul.

The question of liquidation was informally discussed, but the Chairman remarked that if their claim against the Pool Committee were met the distribution among shareholders would probably only amount to 4d. per share.

The only decision reached was that shareholders should be called together after the above claim had been settled.

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Notes and News.

Progress at Messina. The Messina Company has ordered a Merton roasting furnace. The equipment is on the water and the bricks have been ordered from the Findlay Company, of Boksburg. Two additional reverberatory furnaces will also be erected in the near future. Smelting operations continue to be productive of most satisfactory results at the mine, and the output for December was, so we learn, the largest ever recorded in the history of the company.

* * * *

The Griffin. We are informed that there is no truth in the closing down of the Griffin Mine in the Leydsdorp district, as reported in our last issue. Owing to a breakdown, the mill has been hung up, but this is only temporary and the plant will shortly be in full working order again. A change of management has been made.

* * * *

The New Heriot. The New Heriot mine has recorded another loss in respect of monthly operations. Last month only 6,300 tons were milled and 2,227 ozs. of gold recovered, working expenditure exceeding revenue by £2,577. In the preceding month the loss was £1,336. It may be recalled that in November the mine was flooded as a consequence of the heavy rains, which drowned out some of the stopes. Since then operations have naturally been greatly disorganised, but the current month should witness a return to normal profit or something closely approaching thereto, as the mine is now free of accumulated water and both mining and milling operations are proceeding normally.

* * * *

Bwana M'Kubwa Copper. The accounts of the Bwana M'Kubwa Copper Mining Company, Ltd., for the year to June 30 last show that at that date the net amount of cash in hand and at bankers was £48,418, against £90,896 at June 30, 1912, the decrease being accounted for by further cash expenditure on machinery, plant, etc., and on general development, ore tests, working costs, etc., at the mine, less concentrates realised. The Board propose to proceed with the opening of the sulphide ore bodies at depth, and in this connection tenders are being obtained for the necessary pumping plant; also to continue the mining and concentrating of the high grade ore, working in, as far as practicable, selected ore from the low grade ore bodies—the resulting concentrates to be smelted at the mine, with a view to reducing as far as possible the heavy railage charge to the port of shipment. The company has sufficient funds to carry out this programme.

* * * *

London and Rhodesian Mining. The report of the London and Rhodesian Mining and Land Company, Ltd., for the year to June 30 last shows a net profit of £43,515, making, with £41,391 brought forward, a total credit of £84,906. This result is considered satisfactory, taking into consideration the indifferent market conditions which have prevailed during the past twelve months. The reserve account at the date of the last accounts stood at £75,000. During the year the directors have transferred £50,000 from this amount for the purpose of writing down the cost price of certain share investments, and have transferred £75,000 from profit and loss account to credit of reserve account, which now stands at £100,000.

* * * *

New Lisbon Berlyn Ore Problems. Efforts are now being made to place the finances of the New Lisbon Berlyn Company on a satisfactory basis and to bring that mine to the productive stage. According to the report of the H. E. Proprietary Company for the year ending June 30, 1913, development work on the property during that period was productive of satisfactory results, and the Board is advised that it is now possible to treat the pyritic ore of the mine at a profit. The question of extraction has been the great problem with this company. In past years only a little more than half the gold contained in the ore was extracted, the ore being refractory. It may be remembered it was reported some little time ago that an entirely new process of extraction had been instituted, which extracts about 85 per cent. The new plant comprised 20-stamp mill, tube, Wilfley tables, etc., to deal with about 3,000 tons monthly.

* * * *

The Cinderella.

Dealing with the Cinderella Consolidated in a recent issue, we expressed the opinion that a contributory cause of the closing down of the mine was the poor development. This view, we are now satisfied, is not warranted by the facts. The last development returns from the mine show, if anything, an improvement in values in the lowest levels, and it is plain that the ore opened up had nothing to do with the decision of the directors to close down temporarily. This was due solely to the difficulty found in raising fresh capital, owing to present unfavourable monetary conditions. As Mr. Nathan put it at the last annual meeting: "As it is inadvisable to continue crushing high-grade ore without a profit, your board instructed the company's engineers to examine the mine with a view to ascertaining whether it was possible to reorganise working conditions in such a manner as to bring about the necessary reductions without interfering with milling, or whether it was advisable to suspend milling for a period, during such possible reorganisation." The results of the technical investigation, it may be recalled, were such that the board decided to suspend milling operations.

* * * *

Mining in Angola.

According to an official German publication, the mining industry of Angola is at present only in the first stage of development, but it is believed that the country holds rich mineral deposits. In the Loanda district, near Zeusse, copper, iron, and coal deposits have been discovered by Hans Gründler, a German prospector. They are situated in close proximity to each other, the distance from the railway being no more than from one to sixteen kilometres. The coal area covers 300 hectares, copper 100, and iron 200. A Bremen syndicate has acquired the concession of the three areas, and has already spent M. 400,000 in prospecting and development work, which is stated to have given satisfactory results. Further inland, all round Holungo Alto many indications point to the occurrence of rich ore deposits; large magnetite iron occurrences have already been proved there. Near Bembe prospectors in the service of the Portuguese Government have found copper, but, so far, the authorities have not done anything for the development of the ores; some private companies have not been successful, and the Companhia de Mossamedes has abandoned its claims. The Rassinga district, where gold was expected to occur, has proved a disappointment. The Lobito Railway Company, which has the prospecting rights extending over an area of twelve miles on both sides of the railway, has spent M. 12,000,000 without any results; its rights will lapse in 1914. Rich petroleum fields are believed to exist in Angola. The concession to exploit certain areas has been granted to a Portuguese firm, backed to some extent by British capital. The richest area is said to be on the Daude river. So far, the exploration works are stated to have given satisfactory results.

* * * *

New Districts Development Co.

The accounts of the New Districts Development Company cover the period of 14 months from August 31, 1912, being the date when this company took over the affairs of the South African Co., to October 31, 1913. Quoted securities have been taken at, or below, the market price ruling on that date. Unquoted securities, claims and other interests have been taken at, or below, the figures at which they were acquired. The profit and loss account shows that the net profit has amounted to £9,327. Of this amount £7,791 has been transferred to a reserve account, and the balance of £1,535 is carried forward to next year's account. There has been further added to the reserve account an amount taken over from the profit and loss account of the South African Co., thereby bringing the reserve account to a sum of £12,600, equal to 10 per cent. of the company's issued capital. The revenue shown in the profit and loss account is derived almost wholly from interest and dividends received from investments. Since the close of the accounts the company, as authorised by an extraordinary general meeting of shareholders, has acquired the whole share capital of the St. James' Court, Ltd. It is expected that the dividends to be received from this investment will add materially to the results of the current financial year. The New Districts Development Co., Ltd., is at the present date chiefly interested in the following enterprises:—Piccadilly Hotel, St. James' Court, Ltd., Channel Collieries Trust, Ltd., and New Lisbon-Berlyn, Ltd., where a considerable tonnage of payable ore has been opened up.

* * * *

Gold Mines Investment.

The report of the directors of the Gold Mines Investment Company, Ltd., for the year ended November 30 last, states that the realised net profit for the year ended November 30, after allowing for certain realised losses, costs of management, French Government duty and income tax, amounts to £19,979, to which must be added the sum of £126,866 brought forward from last year, making £146,845, which is subject to depreciation estimated at £304,952. The amount to credit of reserve remains at £125,000, which is invested in the general business of the company. The investments stand in the books of the company at cost, and show a depreciation as set out in the balance sheet. The valuation of £404,374 of the company's investments, which is exclusive of £62,519, the value of other assets, after deducting liabilities, is arrived at as to £293,478 by taking the quoted selling price of the company's holdings on November 30, and as to £110,896 by taking the directors' and managers' estimate of the unquoted securities. In view of the estimated depreciation of £304,952, the directors regret that they do not feel justified in recommending the payment of a dividend.

* * * *

Rhodesian Future.

Mr. Samuel Weil, presiding at the annual meeting of shareholders of the London and Rhodesian Mining and Land Company, Ltd., referred to the steady progress made by Rhodesia. He declared that the policy of the mining groups in improving their property and building up large reserves would go far in establishing the industry on sound lines. He hoped that shortly they would be in receipt of further income from various interests, which would place the company in a position to pay dividends without being dependent on market operations. He believed there would soon be a revival in all classes of securities, in which Rhodesia would share, more especially as the burden of railway rates and other matters at present handicapping the industry were likely to be revised by Sir Starr Jameson and his colleagues.

* * * *

Van Ryn.

During the year ended June 30, 1913, 456,190 tons were crushed at the Van Ryn for a total yield of 150,437 ozs., valued at £637,788, or 27s. 11·5d. per ton. Working expenses averaged 15s. 11·9d. per ton, and the working profit was thus £272,919. As compared with the previous year, 4,550 tons less were crushed, and the yield of gold was £1,607 less, the shortfall being due to the strike of white miners, in consequence of which milling ceased on June 19. The working profit compares with £276,234 in the preceding year, but the company's net profit is increased by other accounts to a total of £288,853, the largest in its history. Out of this amount £25,598 has been paid in taxation, £3,656 for the Miners' Phthisis Compensation Fund, and £21,632 applied for various writings off. Two dividends of 4s. 6d. and 5s. per share were declared in December and June, and a balance of £18,218 carried forward, against £17,753 brought in from 1912. The ore reserves at June 30 were estimated at 2,064,529 tons of fully developed ore, valued at 6·5 dwts., or 27s. 8d., over a stoping width of 54 ins., and, in addition, there are 843,143 tons of under 4 dwts. per ton, a certain proportion of which it is anticipated can be profitably treated. Considerable progress has now been made in opening up No. 3 mine, and the reserves include 125,716 tons in this section of an average 7·6 dwts. calculated over a stoping width of 39 ins. A full report of the proceedings at the annual meeting appears elsewhere in this issue.

* * * *

Barnato Group Profits. The mines of the Barnato group, despite labour shortage on several properties, have again declared an aggregate profit of over £100,000 as the result of a month's working. The December figures are 995 stamps, 206,453 tons milled, £264,326 revenue, and £100,264 profit. These results compare with 1,005 stamps, 199,764 tons crushed, £262,867 revenue, and £102,887 profit in November. Last month's returns were affected by native labour scarcity and doubtless in some degree by the Xmas holidays, but the profit result of the group for the whole year is gratifying in the extreme. In January the group profit was £79,198. In the short month of February it fell to £74,114. Thereafter it rose to £81,152 in March and £84,369 in June. In July there was a temporary set-back to £59,316 on account of the strike, but since then earnings have risen to over £100,000 per month as a result of the entry of the Van Ryn Deep into the crushing list. Thus the August profit was £89,545, that for September £99,114, and October £104,597, whilst, as already stated, the November and December profits have each been over £100,000. Last month the largest profit-earner was the Van Ryn Deep with £27,083, followed by the Witwatersrand (£23,125), the Consolidated Langlaagte (£21,642), and the New Primrose (£17,109). The New Rietfontein recorded a small loss, and the Quest earned £710. The New Unified recorded a profit of £5,175, the Ginsberg £4,519, and the Glencairn £2,276.

* * * *

Frank Smith Diamond Co. Although the Frank Smith Diamond Mine has taken longer to get into regular work than was anticipated when it was decided to re-open and re-equip it some two years ago, it is evident from the speech of Mr. Turk at the meeting of the company that the initial difficulties have now been successfully overcome and a bright future may be confidently expected. The delays were largely due to the coal strike in England and were therefore beyond the control of the management. Washing operations commenced towards the end of June last and were continued throughout July and August. As is usual, however, plant of this kind when first set to work requires a good deal in the way of adjustment and general tuning up before it is able to be run to its full capacity, and in order to effect these satisfactorily it was decided early in September to suspend washing for a short period. When washing was resumed on October 6 a distinct improvement in the returns was noticeable and this improvement has continued up to the present time, and from the middle of the present month it is anticipated that the plant will be running at its full capacity of about 20,000 loads per week. One of the most satisfactory features in connection with the company is that actual working has so far fully confirmed the estimates originally made by Mr. T. G. McLelland, the managing director. For instance, he estimated that the yield of the mine would probably be four carats per 100 loads. So far 134,058 loads have been treated for a recovery for 5,351 carats—almost exactly four carats per 100 loads. Then he put the average value of the diamonds at 70s. per carat. Although no actual sales of diamonds have taken place, they have been valued in South Africa and the value is within 5 per cent. of the estimated figure. It has not been possible, owing to interruptions and delays in running the plant, to test the estimate of working costs, but we notice the chairman stated that there was no reason to anticipate that Mr. McLelland's figure of 1s. 6d. per load would be exceeded with the plant running at its full capacity. It is hardly necessary to point out that these figures show a substantial profit on working, and, therefore, we think the shareholders are justified in looking forward to the result of the current year's operations with hopeful anticipation.

TOPICS OF THE WEEK.

THE LABOUR TROUBLE.

The railway strike, at the moment of going to press, monopolises attention. On Thursday there were signs that it was likely to prove abortive, but by Friday morning it had taken a more serious turn, owing to the decision of more of the running staff to throw in their lot with the strikers. How far the trouble may spread the next few days will reveal, and at this juncture one can only hope that counsels of wisdom and moderation may yet prevail. The possibilities with which the situation is fraught are generally recognised, and need not here be laboured. Should the running staff of the railways remain out, there is, of course, the eminent danger of a general closing down of industry; and the natives on the mines would, of course, at once have to be sent back to their homes. To this the obvious corollary is the complete cessation of work on the mines for an indefinite period—authoritatively estimated at from one to two years—and an appalling prospect of unemployment and starvation for the white workers. In thus declaring war on the public, the railwaymen are directly and effectively taking steps to ruin the white miners of the Rand, and to bring about such an era of unemployment as this country has never before seen. Of course, there is still hope that, aided by loyal railwaymen from the other Provinces, the lines to the coal mines may still be kept open, and the chief danger of the present strike, viz., the closing down of the mines for lack of power, may be obviated. Should the Railway Administration be successful in this direction, the struggle between Government and men would be shorn of its worst terrors, and the Rand community could contemplate it with more complacency. But as the efficacy of the strike to bring the Government to its knees depends on this very factor, a big effort will, doubtless, be made to embarrass the mines and Railway Administration in regard to it. Another alternative remains to be considered. It is possible that the Federation of Trades may attempt to call out the miners under the pretext of what is known as a "sympathetic strike." Obviously, no more direct way of asking the white workers of the Rand to cut their own throats could be devised. The appeal, if successful, would merely precipitate the closing down of the industry for an indefinite period, and the departure of the natives. It is unthinkable, therefore, that the miners will listen to the agitators in this respect, and the instinct of self-preservation should be strong enough to combat this danger. The railwaymen, plainly, will have to pay for their own folly and precipitate action. Mr. Poutsma, as editor of the *Railway and Harbours Gazette*, has written an impassioned article, in which he endeavours to work up the passions of the men by representing the Railway Administration as a brutal taskmaster, depriving men of their means of livelihood and leaving their wives and families starving and penniless. If railwaymen will only keep their heads cool, they will realise that the force of such an appeal depends on the assumption, for which there is yet no evidence, that the Railway Administration has in fact dismissed men unjustly and unnecessarily. And they will also realise that, if the sufferings of wives and children are to be considered, a general strike in such a cause is utter madness. A New Zealand contemporary, writing at the time of the recent industrial upheaval in that Dominion, recalled an Australian precedent very much to the point in this connection. When the great strike took place in Brisbane about 2,000 men went out in Sydney. The Railway Commissioner, a man who had worked himself up to his distinguished office from the position of guard, and who knew the workers' side of the question, called a mass meeting of the men. "Boys, go to your homes," he said, "and talk to your wives and look at your children. And when you have done that, come and see me again." They took his advice, and all but about 200 returned to work next day. The lesson has an obvious moral for the railwaymen of the Union.

THE YEAR IN THE "OUTSIDE" GOLD FIELDS.

A Review of 1913 in the Outlying Auriferous Areas of the Transvaal—Dividends Higher—The Influence of New Railways.

The outlying gold mining districts of the Transvaal have had a more or less uneventful year. These areas have not been affected by industrial upheavals and rumours of industrial upheavals, as was the lot of the Rand last year, and the gold mines of Lydenburg, Barberton and the Northern Transvaal have been allowed to pursue the even tenour of their ways undisturbed by disputes between employers and employees. Dividends of an aggregate total of over three-quarters of a million sterling were declared by the outlying gold mines of the country last year. Of this amount the Lydenburg district contributed £264,905 as against £229,992 in 1912, and the Barberton Field £40,460 in comparison with £47,204 in the preceding year. The Nigel district yielded £32,734, which is £11,155 less than in 1912, the dividend of the Nigel G.M. Company having declined by that amount.

The Zoutpansberg.

In addition to these earnings there might be added the profits earned by small syndicates and working owners operating small batteries in the Lydenburg, Barberton and Zoutpansberg districts. These latter earnings cannot be even guessed at, and whatever the aggregate profit earned by all the successful workers of the outlying goldfields of the Transvaal may be, it is certain that it would be considerably reduced were the losses entailed by unsuccessful operators set against it. It is, however, certain that in the eastern, north-eastern and northern parts of the Province there are numbers of men who are making a very excellent living out of properties which have been tried and found wanting by large corporations and by companies possessed of all the costly machinery of head offices, consulting engineers and boards of directors. Numerous instances of the successful operation of these small mines by working tributors or lessees might be cited. For instance, the Fortuna and Ulundi in the De Kaap area, and the Burnham Syndicate near Pilgrims Rest, might be given as examples. In the Zoutpansberg district, too, one or two mines which were famous in the early nineties have been re-opened. In this field the advent of the Selati Railway, coupled with completion of the Pietersburg—Messina Railway, has put quite a fresh complexion on affairs since the great disadvantage that handicapped the district in the past—lack of transport—has now been largely removed. The Zoutpansberg contains extensive auriferous stretches, and it is confidently hoped and believed that in the not far distant future there will be considerable gold mining activity in this area.

Lydenburg.

The most important gold mining venture of the outside districts of the Transvaal is, of course, the Transvaal Gold Mining Estates in the Lydenburg district, which has well maintained its predominant position during the past year. This property may certainly be accounted one of the leading gold mines of the world, and were it not for the fact that the Rand tends to throw into comparative insignificance all other gold ventures in the Transvaal, a great deal more would be heard of it. Development at the properties of this company has continued to expose large stretches of payable ore, dividends for the year have totalled £241,690 although much hampered by scarcity of labour in the latter months of the year, and profits of between £20,000 and £25,000 per month have been earned. At the other important mine of the district—the Glynn's Lydenburg—results recently secured have been none too satisfactory and the dividend aggregate for 1913 was £25,500 less than that of 1912. Mr. Aimetti, manager of the Transvaal Gold Mining Estates, was commissioned during the year to aid Mr. Damant and make a report on the property, and from Mr. Aimetti's document and the annual report of the General Manager, Mr. Damant, it appears that whilst this proposition does not enjoy such a satisfactory position as it did in former years there are numerous encouraging points on the property, further development of which may retrieve the position of this successful outside district mine. Other features of interest in the Lydenburg district are the declaration of half-yearly dividends by the Ceylon Lydenburg Company, the opening up of the Mali Dyke mine by the South East Africa Co., Ltd., and the successful exploitation of a number of small properties throughout the Pilgrims Rest—Lydenburg field.

Barberton.

In the Barberton district there are at present eleven producing gold mines, the annual rate of output being close on a third of a million pounds. Attention may be directed to the good results that have been obtained by working the Ulundi Mine on tribute, and the success that has attended the working of the Fortuna. This latter property is situated on the outskirts of the town, and a drive has been carried through one of the hills at the back of the township. Another proposition which is opening up well is the Fairview Mine of the Transvaal Consolidated Land and Exploration Company, where two Nissen stamps and a small tube mill are working. The largest propositions in the district are, it is perhaps hardly necessary to state, the Sheba and the Worcester. The Sheba has erected 120 stamps, and is at present operating about half these and earning a profit of from £4,000 to £5,000 per month. In the year ending December 31st, 1913, the company distributed in dividends £47,204. Dividends totalling 17½ per cent. were declared in respect of the last financial year's operations—June 30, 1912, to June 30, 1913—and the outlook for the payment of a similar amount during the current twelve months is decidedly hopeful. The Worcester Mine has 40 stamps at work, operated by water power, and here a profit of £1,178 was earned in November. The only other productive mine in the Barberton district, which declares returns to the Chamber of Mines is the Barrett, which is probably the lowest grade mine in Africa—a recovery of only 6s. 10d. per ton being recorded in respect of the November operations. There were, however, according to the Government Mines Department, eleven mines crushing in November, operating 192 stamps and three tube mills, and their total output was £28,896. In addition to this return there were reef and alluvial diggers in the Kaapschehoop district who found an additional £779 in gold.

Klerksdorp and Heidelberg.

As to the two outlying areas of the Rand, the Klerksdorp and Heidelberg districts, it may be remarked that the former field is practically moribund, the earning of small profits at the Quest mine under Barnato control, and the resuscitation of the Machavie mine being the only matters that call for remark. As to Heidelberg, the eccentricities of the Nigel Reef, coupled with labour shortage, appear to have taxed the management of the Nigel mine, the dividend for the year being half that declared in respect of the 1912 operations. The Sub Nigel, which entered the dividend list at the end of last year, has paid out two dividends, each of 2½ per cent. Of recent years efforts to locate the thin and erratic but rich "main reef" of the Nigel district outside the properties of these two concerns have been conspicuous by their absence, and it would appear that technical and expert opinion is now opposed to the belief that the Nigel ore body has anything but a very limited development. Further afield, along the Coronation line, that is to the south-east of the Nigel, no mining work has been undertaken.

This must conclude what is necessarily a brief review of gold mining in the outside districts of the Transvaal during 1913. Whilst the year has not been productive of any sensational developments it can at least be said that it has witnessed steady progress in the outlying gold fields, and moreover that it has brought forth distinct promise of new mines and resuscitated mines assisting to swell the gold output of the Province in the very near future.

THE ENGINEER-IN-CHARGE AND STAFF OF THE VICTORIA FALLS POWER STATION, VEREENIGING.

Inset: F. J. Bedman (Engineer-in-Charge). Sitting in front: G. Hodges (Telephone Operator), F. Hoskings (Junior Clerk).
1st Row: G. L. Esmond (Station Clerk), A. Webster (Senior Switchboard Attendant), F. Morrison (Shift Engineer), E. E. Briggs (Acting Engineer-in-Charge), J. A. West (Shift Engineer), B. R. Penney (Senior Switchboard Attendant), Dr. Chapman (Medical Officer).
2nd Row: A. Goodes (Assistant Switchboard Attendant), H. Boag (Station Electrician), A. Ekstrom (Assistant Switchboard Attendant), A. Elliot (Assistant Switchboard Attendant), T. Barnes (Station Fitter), A. Creed (Storekeeper).
3rd Row: P. von Rensburg (Assistant Switchboard Attendant), W. Harrison (Assistant Storekeeper), H. B. Robey (Compound Manager), P. Ris (Assistant Clerk), F. Ward (District Engineer).

POSITION AT THE "STATE MINES."

Progress of Construction Work—First Mortar Blocks Cast—Generally Satisfactory Development.

At the Modderfontein Gold Mining Areas property construction work is being pushed on with, and preliminary plans for the laying out of the plant have been for some time completed. Work in connection with the foundations is progressing well, and the first mortar blocks for the mill have been cast. Development is proceeding from the four shafts and results generally are satisfactory. It is particularly gratifying to learn that around the south-east shaft the reef disclosures are very good. No great amount of work has as yet been carried out from this shaft, but such as has been done is of a most encouraging nature. As to the equipment, it may be repeated that the "State Mines" plant will in most essential details be a replica of the equipment at the Van Ryn Deep, which, in turn, was modelled, in so far as battery, tube mills, and sand plants are concerned, on the lines of the Consolidated Langlaagte installation. The Van Ryn Deep plant, it will be recalled, commenced crushing about the middle of the year and is achieving most efficient work. The State Mines battery and accessory reduction and treatment machinery may be expected to achieve equally satisfactory results. The first section of the plant will have a capacity of 50,000 tons, and it is expected that a plant will be operating on this basis of crushing before the end of 1914.

THE EXTENSION CONSIDERATION.

Having regard to the enormous mining area controlled by the company, the equipment will naturally be laid out with a view to expansion. A further stage in the milling scheme will be attained when plant of 100,000 tons per month capacity is installed, but beyond this there will, doubtless, be further extension, to what limit it is impossible at this early stage in the history of the company to say.

THE BATTERY.

The first essential point of difference between the State Mines equipment and that of the Van Ryn Deep is that the former will include a back to back battery, whereas the stamps at Langlaagte and the Van Ryn Deep are arranged on the single row principle. There will thus, too, be a different arrangement for delivery of mill pulp to the tube mills. A battery of back to back pattern naturally adapts itself to extension more readily than a single row equipment, and this, as already stated, has had to be a dominant consideration in regard to the Modderfontein property. It has been decided to erect the plant close to the south-east shaft. The permanent offices and workshops are located there and the situation generally accommodates itself to concentration of work around this point. The shafts are all connected up by railway lines, and locomotives will transport ore to the mill in 40-ton hopper trucks, as are in use at the Van Ryn Deep, Main Reef West, and Randfontein Central, etc. The first section of the equipment will consist of a battery of 100 stamps with sand and Butters' vacuum filter slime plants. The stamps will have a falling weight when new of 2,000 lbs. apiece and will thus be about 80 lbs. heavier than those of the Van Ryn Deep. The extra weight will be secured by an increase in the size of the heads and shoes.

TUBE MILLS.

The proportion of tube mills to stamps will be the same as at the Van Ryn Deep and the Consolidated Langlaagte, namely, one tube mill to ten stamps. The ten tubes of the State Mines will each be of standard 16 ft. 6 ins. by 6 ft. size, as are those in the Van Ryn Deep, Consolidated Langlaagte and Witwatersrand G.M. Company's plants. At the Van Ryn Deep the mill pulp gravitates direct from the mortar boxes straight into the tube mill cones, but at the State Mines the pulp will gravitate from the boxes to the coarse sand pumps with a view to saving the cost of excavating which the former arrangement entails.

SAND AND SLIME PLANTS.

The sand plant will be identical in design to that of the Van Ryn Deep. Clasification will be the same, and there will be three sand-collecting tanks, each 56 ft. by 10 ft., with Butters' distributors and eight treatment tanks, each 56 ft. by 11 ft., with Blaisdell distributor. The slime plant will include a Butters' vacuum filter equipment (392 leaves) of pumping type—the filter plant at the Van Ryn Deep is of gravity pattern. There will be six slime collectors, each 70 ft. by 12 ft., with 7 ft. 6 in. cones and nine Brown agitator tanks of standard 45 ft. by 15 ft. size. The main crusher station will be at the south-east shaft. The equipment will be electrically operated (one motor to ten stamps), and the arrangements for discharge of residues to sand dump in trucks will be the same as at the Van Ryn Deep.

MINING MEN AND MATTERS.

Mr. R. W. Schumacher, Mr. M. G. Elkan, and Mr. C. H. Clifford have returned to the Rand.

* * * *

A *Government Gazette* notice announces that Dr. W. Smith, M.B., Ch.B., attached to the Wolhuter, New Goch, Meyer and Charlton, Nourse Mines, and City Deep, has been appointed by the Minister of Mines and Industries under Section 25 of the Miners' Phthisis Act to examine persons seeking to obtain employment on the mines as miners and to furnish the necessary certificate.

* * * *

Mr. George T. Cousins, who, for the past three years, has been manager of the Johannesburg branch of the Ingersoll-Rand Company, has been called to New York to occupy a position of greater importance in the home office. Mr. Cousins' experience in the mining fields of the United States, augmented by his three years' service on the Rand, has given him an education in the application of drilling machines to deep mining that qualifies him to take charge of expert work for his company in a general capacity. His talents will be utilised in the direction of assisting the Ingersoll-Rand Company in keeping the lead in the development of the rock drill. He will be succeeded in Johannesburg by Mr. A. S. Uhler.

Glynn's Lydenburg.

The following are the particulars of the company's output for the month of December, 1913:—Tons crushed, 3,845, yielding 2,089 fine ozs.; estimated value of month's output, £8,775; estimated profit for the month, £4,921.

Blaauwbosch Diamonds.

Washing returns for December, 1913:—4,893 loads washed, 1,071 carats recovered, or 21·88 carats per 100 loads. Washing was discontinued on the 17th December, owing to a threatened fall of reef, which it became necessary to remove, and it is feared for a period of two months extraordinary reef hauling will have to be continued, so as to make the mine safe for the opening up of a new level. During this period tailings will be treated.

THE YEAR WITH THE EAST RAND PROPRIETARY.

Dividends Maintained—Strength of the Company Not Impaired, Despite a Difficult Time.

DESPITE many difficulties the East Rand Proprietary Mines, Ltd., in the year just brought to a close, maintained its rate of dividend, there being distributed amongst shareholders 12½ per cent., or £305,736 in each half year, making the total in respect of the 1913 operations £611,472, or the same as in 1912. It may be recalled that on account of the strike declaration of the half-year's interim dividend, usually announced in June, was postponed until August, when the industrial atmosphere appeared more tranquil. Having regard to the cessation of work in the beginning of July last and the consequent disorganisation of the whole industry, the dividend achievement of the E.R.P.M. must be deemed quite satisfactory, especially so in view of the fact that at the end of the year the company's mines were still notably short of unskilled coloured labour.

THE YEAR'S PROFITS.

The December profit of £75,010 was substantially less than that earned in November, notwithstanding the longer month. Holidays may in a considerable degree be responsible for this, but to shortage of native labour the earning of not more than this amount, which is relatively small in comparison with earnings in the earlier months of the year is mainly attributable. It will here be of interest to examine the returns of the East Rand group secured during last year. The results obtained in the first three quarters of the year and in the final three months are as follows:—

	Stamps.	Tons milled.	Output.	Per ton.		Costs per ton.		Profit.	Per ton	
				s.	d.	s.	d.		s.	d.
March quarter	820	477,700	£736,518	30	10	19	7	£280,223	11	3
June quarter	820	501,000	742,611	29	8	18	10	282,224	10	10
September quarter	820	395,600	[illegible]	30	9	20	7	213,100	10	2
Month of October	820	138,100	227,763			—		83,504		
Month of November	820	129,000	218,601	32	6	20	11	79,252	11	7
Month of December	820	127,600	209,474			—		75,010		

The year's profit, it will be seen from the above, was £1,013,313, as a result of milling 1,769,000 tons of ore. This also includes profit derived from treatment of accumulations. The profit mentioned above is arrived at by adding up the quarterly and monthly earnings, and is, of course, subject to adjustment at the end of the year, when the balance sheet is finally made up, but it may be remarked that the 1912 and 1913 results in point of tons milled and profits earned, compare as under:—

	Tons milled.	Profit earned.
1912	1,848,050	£1,076,746
1913	1,769,000	£1,013,313

From this it will be seen that the tonnage milled last year was 79,050 less, whilst the profit declined by £63,433 in comparison with 1912.

FINANCES.

From the profits earned there must be deducted the quarterly proportions of the Government profits tax, interest on debentures, etc. The report for the three months ending December has not yet been issued, but for the first three quarters of the year the deductions to be made from profits under these heads were as under:—

March quarter	£56,010
June quarter	50,353
September quarter	64,473

The September deduction was exceptionally large on account of an item of £20,423 incurred in connection with strike expenditure. On "authorised votes" (shaft sinking, additions to plant, etc.), the following sums were expended:

March quarter	£50,799
June quarter	79,515
September quarter	23,467

At the end of September last the approximate cash position of the company was that after providing for all liabilities, but exclusive of the debenture issue, there was a cash balance of £209,042. Since that date a gross profit of £238,000 has been earned and £305,736 has been paid out in dividends.

DEVELOPMENT.

It was only to be expected that as a consequence of labour shortage there would be some restriction of development operations. Thus, whereas in the March quarter 15,486 feet were driven, sunk and risen, and 17,221 feet in the June quarter, the footage in the three months ending with September was only 11,808. Reef widths and values appear, however, to have been pretty well maintained throughout the year, and the annual report to be presented to shareholders in the course of the next few weeks should disclose no very sensible diminution in the payable ore reserves which at December 31st, 1912, stood at over six million tons.

A CREDITABLE RESULT.

To sum up the year's work, it may be stated that the East Rand Proprietary, in common with most other mines on the Main Reef series, has weathered a stormy year in a highly creditable manner. It must at least be satisfactory to shareholders to realise that notwithstanding the serious and costly disorganisation of operations in the middle of the year and the shortage of coloured labour that has been a regrettable corollary of that disorganisation, the dividend declaration has been maintained, whilst the ore reserve and financial positions remain at much the same strength as at the end of the previous year.

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POSITION OF THE WORCESTER GOLD MINE.

Shortage of Native Labour—Barberton Mine Managers Meet.

In the last monthly report issued by the Worcester Gold Mining Company it was stated (says the *Worcester Standard*) that a deficiency of native labour was the cause of the shortage of tonnage crushed. This is borne out by the statement of the Barberton correspondent to the *Transvaal Leader*, in which he says: The chief item to be recorded in the affairs of the district at present is the general shortage of native labour that is being experienced all round. For the past two or three months most of the mines in the De Kaap have had their operations considerably curtailed owing to the want of boys, and development work has suffered especially on many properties. It is not only one portion of the district that is affected in this way; the experience is general. The Sheba, the Worcester, the Consort, the Fortuna, the Alpine, the Ivy, the Imperial, and other properties besides could all do with additional strong contingents of native labour; and efforts at recruiting meet with the most meagre results. The principal causes to which the shortage is attributed are the excellent crops secured last season in Swaziland and in the Barberton district, and the facilities for beer-drinking everywhere available; and the plentiful early rains with the consequent opportunity for ploughing and sowing for the next crops. The plentiful labour resources of the district, both for Barberton and Swaziland, are amply in excess of all requirements, but all the inducements offered to liberate the resources fail to equal the attractions of the kraal. The feeling of independence in evidence among the natives is probably due as much to the high rate of wages obtained in connection with the prosecution of public works as to the ample crops of mealies and Kaffir corn and the plentiful manufacture of beer. When local mine boys ask for leave for a fortnight for family reasons, the employer may just as well give it, no matter how ill he can spare the boys. There is an off-chance that the boys may return to work after their " fagash "; and, if leave be refused, they go just the same, and the chance of returning to their job is practically hopeless. The labour complement has been so reduced in the last few months that it is quite risky to venture to scold a boy for stupidity, or slackness or carelessness. The result of rebuke is as likely as not to be, " Notice, baas; mena funa ticket "—and another boy goes off the pay-sheet. Quite a number of householders find themselves in just the same predicament as the mines—there is no supply to meet the demand. Over a month ago the Imperial stopped crushing on account of the depletion of labour, and confined operations to development work. On the Worcester, efforts are being made to counteract the deficiency of boys by introducing a light, compressed air-driven machine drill for stoping. The type is known as the " Jack Hammer," or " Plugger " machine, which requires only one native to operate. The advantages it possesses are that it uses very little air, and is not cumbersome to manipulate, a bar or tripod being unnecessary for this class of drill. The Worcester rock is pretty hard, but if the drill gives satisfactory results, it would go a long way towards meeting the difficulty created by the periodical restriction of labour supplies. The effect upon the mines is naturally reflected in the business of the town, which in the last couple of months has seen the slackest period of the year. The opinion is, however, expressed that an improvement in the labour outlook may be expected very soon; such improvement will certainly be welcomed. At a meeting of Barberton mine managers, last week, the following resolution was taken: " That a committee of two, consisting of the chairman and Mr. R. Wormald, draft a scheme to deal with the following points: (1) The acquiring of more labour; (2) better means for recovering deserters; (3) all natives entering service to register their contracts and to be liable for breach of same; (4) all employers report all their deserters immediately." At a meeting in a month's time the sub-committee will further submit a draft of such modifications of the Labour Law as will be suitable for local conditions.

CORNER HOUSE COMPANIES IN DECEMBER.

Improvement on November Results—Village Main Reef's Large Increase.

Last month the mines under Corner House control earned a total profit of £426,000, the Rand Mines group contributing £211,158 and the other subsidiaries of the Central Mining administration £214,786. The profits of these two groups, which are by far and away the most important on the Witwatersrand, during the last four months have been:—

September	Central Mining	£222,619
	Rand Mines	218,699
		£441,318
October-	Central Mining	£228,247
	Rand Mines	219,834
		£448,081
November—	Central Mining	£119,463
	Rand Mines	212,832
		£412,295
December—	Central Mining	£214,786
	Rand Mines	211,158
		£425,944

The December aggregate, it will be observed, was £13,649 higher than that for November, but was substantially lower than the total earned in September and October. Of the Central Mining companies, the New Modderfontein's profit has risen from £40,892 to £44,070, whilst the Village Main Reef shows a big advance from £27,589 to £39,243. The Modder B.'s profit is £4,000 less, the Robinson shows a small increase, whilst the Village Deep (£18,359) is much the same as last month. The City Deep's profit is £26,059 against £22,770 in November, and the earning of the Bantjes shows a decline from £2,698 to £2,082. As to the Rand Mines group, the Crown Mines crushed 1,000 more tons of ore and the profit is a little better at £108,671. The earning of the Rose Deep is down from £29,762 to £25,005, but the Geldenhuis Deep has improved from £6,961 to £9,939. The Nourse Mines is still very short of labour, and this is reflected in profits which were £14,753 in November and £12,635 in December. The Ferreira Deep's profit remains stationary and that of the Durban Roodepoort Deep is £132 less.

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THE SAFE HANDLING OF MISSED HOLES.

Views of Practical American Miners.

THE *Engineering and Mining Journal* of New York has addressed communications to various mining companies asking for their practice in the treatment of missed holes and their opinions on the subject. This article is designed to sum up the testimony received. The subject is an old one, as old as blasting itself. The danger of accident and death from the explosion of missed holes has been always recognised by mining companies and has been in most cases a matter of diligent attention and stringent rules. The current agitation in favour of safety first, and the attempts to reduce the mining death rate in the United States to a decent figure, render the subject of timely interest, even if not new. The great cause of mining accidents is falls of ground, and it will probably always so remain. The next most important source, as abundantly proved by figures for all countries, is explosions of powder. There is this important difference between these two hazards, however, namely, that the first is extremely hard to guard against, the governing conditions being infinitely variable, whereas the second can be attacked with much greater success and a standard code of rules prescribed. Among explosive accidents, it is probable that those due to missed holes predominate, and the detection and removal of these is a subject of the greatest importance. A missed hole once found, the question of how to render it harmless arises. In general, three lines of procedure are open, namely, to remove the powder by picking it out, to explode it with a new primer, to drill a new hole near by, but at a safe distance and in a safe direction, and to explode the old hole with the new one. The object of our inquiry was to ascertain the opinion of those competent to have one, as to which of these methods was preferable. In general it may be stated that the best practice for the shooting the old charge with a new primer, although exceptions to this are to be found. L. F. S. H———— states that the Smuggler-Union Company uses the old primer and does not permit the powder to be picked out. Robert E. Hanley, of the Mammoth Copper Mining Company, favours the use of the new primer in most cases. This is also the practice at the Calumet and Arizona. Mr. Gorhing, superintendent of mines, writes that in his opinion the only method of treating a missed hole is to insert a new primer and that he knows of no circumstances under which it would be safe to drill a new hole near by, or to clean out the old powder. Frank Juliff, foreman of the same company, concurs, and adds that he would advise that no drilling in the vicinity be done in drifts, raises or stopes while any powder remains in the holes. M. W. Mitchell, the other Calumet and Arizona foreman, agrees in general, but would permit the cleaning out of the powder in exceptional cases. W. H. Staver and E. B. Miller, of the Liberty Bell, unite in recommending shooting the old charge. In the event of this method failing, Mr. Staver favours cleaning out the powder or possibly drilling a new hole, if this can be safely done. Mr. Miller remarks upon the fact the collar of the missed hole may be shot off, leaving no room for a new primer. In such case, he would plaster the new primer over the hole and shoot it. He would never dig out the powder, but would permit drilling a new hole when necessary. The rules of the Hecla Mining Company governing the subject of misfires are quoted by James F. McCarthy, manager, as follows: "Miners who have blasted, on coming off shift, must notify the shift coming on if there have been any missed holes and how many, so that they may have full knowledge of the matter., In such cases also the miners coming off shift must write plainly on the blackboard in the shaft house the places where they have left any missed holes and the number of such missed holes. Miners going on shift must examine said blackboard for the record of any missed holes before going to work. Every employee, after spitting a fuse, must remain within hearing distance and count the number of shots he hears and carefully note the number of missed holes, if any. No employee shall under any circumstances approach a missed hole within 20 minutes after spitting the fuse. Employees must carefully examine the workings before setting up machines, for loose or scaling rock or any element of danger and all missed holes must be fired before drilling is commenced. Picking giant powder out of a hole is strictly forbidden. No tamping of powder with steel or iron bars is allowed." It will be noted that the rules prohibit the cleaning of the holes. A copy of these Hecla rules is given every man on the day he begins to work, and a copy is kept posted in the shaft house. Percy E. Barbour, manager of the Uwarra Mining Company, writes as follows: "I am not in favour of drilling a hole adjacent to a hole which is full of unexploded powder. In our present work we invariably shoot the hole over, first carefully drawing out the tamping and old primer and inserting a new one. Our primers are made by inserting a fuse and fulminate cap in the end of a stick of powder, the top of which is tied around a fuse. Therefore after the tamping is withdrawn this primer can be pulled out by a gentle tug on the fuse. The old fuse is cut off and the primer and old cap put back in the hole and a new primer made and inserted. If, as sometimes happens, the primer explodes and leaves unexploded powder in the hole, we handle it in one or two ways. If these is little powder in the hole and shooting will not seem to break enough rock to pay for smoke delay, we take out the powder, but we first fill the hole with water to prevent any chance of explosion. If the contents seem to promise sufficient results we put in a new primer and shoot the powder that is left. As to the detection of missed holes, in our drift work it is easy to tell by the looks of the face whether the hole has failed to go or not. If the hole has been shot, but leaves a boot-leg, these are all tried with a tamping stick to discover if there is any unexploded powder left in the hole." To pull out the old primer is equivalent in danger to cleaning the hole. Presumably, this primer is on the top of the hole. Mr. Bilharz, general manager of the Doe Run Lead Company, follows the same plan, and recommends that the hole be cleaned and that no new hole be drilled. It is evident that neither extraction of the unexploded charge, nor drilling a new hole, is considered safe by most operators, although Mr. Barbour and Mr. Bilharz advise extracting the primer or the powder, and several others would permit it when necessary. This would seem to represent about the sentiment existing in the industry, and agrees with our own view that leaving the old charge undisturbed and exploding it with a new primer is by far the safest course to pursue.

Oceana Development and Roodeplaats (De Beer) D.M., Ltd.

The report of the Oceana Development Company, Ltd., presented at the meeting on the 12th ult., covers the year ended 31st December, 1912, and states that the balance sheet was prepared and audited on the 16th June last, with a view to the annual meeting taking place immediately thereafter. It was then expected that negotiations which had been initiated with the Belgian Government for extensive concessions in the Belgian Congo would have been speedily completed, and it was, therefore, decided to defer the meeting till this could be announced. The actual official convention for the concession was not received until the 1st December. It confers the right over some 75,000 square miles of territory, as shown on the map in the report, to select altogether 1,370,000 acres in seven blocks, over which an exclusive right of research will be given, subject to the mining laws of the Congo Colony. Favourable advices have been received by the directors of the mineral richness of these particular districts, and thus the acquisition of the concession will, in their opinion, be of great importance, and constitute an asset which, having regard to the moderate capitalisation of the company, should materially strengthen its position and improve its prospects. The company is at present negotiating for other important interests, of which at this stage it is inadvisable to publish details. Since the last meeting a commencement has been made with the realisation of certain of the company's farms in the Transvaal. In every case the mineral rights are reserved, and these, in the opinion of the directors, owing to recent developments, are likely to prove of great value. The company's farms in the Bloemhof district are still held under option by the Diamantfontein Development Syndicate, Ltd., and, owing to the continued success of the diamond diggings on the farm London, adjoining the company's farm Pienaarsfontein, that syndicate contemplates further operations on these farms in the near future. Meanwhile the Diamantfontein Syndicate, in which the company is very largely interested, has acquired fresh interests, and has recently floated successfully its first subsidiary company, under the name of the Roodeplaats (De Beer) Diamond Mines, Ltd., to develop and operate diamond discoveries on a farm of that name in the immediate neighbourhood of the Premier Mine.

Frank Smith Diamonds.

For the month of December the results were as follows: 48,753 loads washed, yielding 1,815 carats, including two stones of good quality of 44½ and 18¾ carats respectively.

Crown Diamonds.

Operations at the Crown Diamond Mine for the month of December, 1913, resulted as follows:—18,856 loads washed, yielding 1,846¾ carats of diamonds. It is anticipated that the additional hauling gear and washing plant now in course of erection will be in operation during the present month.

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THE DECEMBER OUTPUT: GROUP RETURNS.

Continued Labour Shortage Affects Returns.

Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of December: -

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep	300	7	59,600	16/11	17,886	£25,005
Geldenhuis Deep .	300	7	43,600	24/ 1	14,973	10,378
Nourse Mines	260	7	41,000	22/11	14,141	12,635
Ferreira Deep ...	245	7	54,550	17/ 2	23,309	51,464
Crown Mines.. ...	660	26	165,000	15/ 6	56,016	108,671
Durban Rood. D.	100	3	22,400	24/ 3	7,188	3,005
Totals & Averages	1,865	57	386,150	18/ 2	133,513	£211,158

The following are the results of crushing operations of Central Mining Companies for the month of November: –

Company.	No. of Stamps.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Modder B.	80	5	31,000	16/11	13,425	£30,425
New Modder	180	7	38,650	17/ 1	18,258	44,070
City Deep	150	9	37,800	24/ 9	17,342	26,059
Village Deep... ...	180	7	44,800	19/ 6	14,769	18,359
Village Main R....	220	6	33,700	18/ 1	16,662	39,243
Robinson	250	6	53,100	14/ 8	22,223	54,548
Bantjes	100	3	22,000	22/ 9	6,435	2,082
Totals & Averages	1,160	43	261,050	18/ 8	109,114	£214,786

The Albu Group.

The following are the details of results regarding the December operations of the producing mines of the General Mining and Finance Corporation Group:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West...	80	14,237	£13,811
Meyer and Charlton	75	14,993	12,932
New Goch	120	28,020	23,417
Roodepoort United	50	22,914	20,803
Van Ryn	140	39,000	31,007
West Rand Consolidated ...	100	19,700	21,631
	565	138,864	£123,601

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West...	19/ 4.8	£18,656	£4,845
Meyer and Charlton	17/ 3.0	35,464	22,532
New Goch	16/ 8.6	29,773	6,356
Roodepoort United	18/ 1.9	21,922	1,119
Van Ryn...	15/10.8	52,698	21,691
West Rand Consolidated ...	21/11.5	26,635	5,004
		£185,148	£61,547

Goerz Group.

Results of operations of the crushing mines comprising the Goerz group for the month of December, 1913:—

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated.. ...	100	—	11,400	£9,750	£1,325
Princess Estate	60	5	23,000	28,176	2,088
Geduld Proprietary . .	60	5	19,750	30,210	8,043
	220	10	54,150	£68,136	£11,456

Barnato Group.

The following are the operations of the Barnato Group for the month of November:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.	Gross Profit including sundry Revenue.
Con. Langlaagte	80	40,600	£56,566	£21,642
Ginsberg	80	14,359	18,367	4,519
Glencairn	160	19,850	14,665	2,276
New Primrose	160	25,000	32,152	17,109
New Rietfontein	120	14,500	13,039	*1,375
New Unified	60	13,000	15,784	5,175
Quest	35	3,264	2,950	710
Van Ryn Deep	80	37,050	62,016	27,083
Witwatersrand	220	38,830	48,787	23,125
December totals .	995	206,453	264,326	£100,264
November totals .	1,005	199,764	262,867	£102,887

*Loss.

The monthly gross profits for 1913 are:—January, £79,198; February, £74,114; March, £81,152; April, £82,350; May, £81,949; June, £84,369; July, £59,316; August, £89,545; September, £99,114; October, £104,597; November, £102,887; December, £100,264.

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep	44,570	£62,414	£26,722
Wolhuter	30,800	39,631	13,393
Consolidated Main Reef...	18,310	30,027	9,592
Main Reef West	17,700	24,790	5,019
Knight Central	21,830	24,696	3,930
Total for Group		£181,558	£58,656

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of December, 1913, of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	68,500	16,712	£32,322
Robinson Deep	100	8	49,000	16,318	28,350
Knights Deep	400	11	74,800	14,877	13,021
Simmer Deep	180	9	57,150	10,554	1,183
Sub Nigel	25	1	4,750	2,326	2,442
Totals	1030	36	254,200	60,787	£77,318

Total gold in reserve:—Simmer and Jack, 2,775 ozs.; Robinson Deep, 2,750 ozs.; Knights Deep, 671 ozs.; Simmer Deep, 1,275 ozs.; Sub Nigel, 700 ozs.; total, 8,171 ozs.

The sundry revenue included in the above total declared profits is as under:—Simmer and Jack, £2,500; Robinson Deep, £347; Knights Deep, £332; Simmer Deep, £514; Sub Nigel, £370; total, £4,063.

Knights Deep.—Results do not include 87 ozs. of gold from the old plates, the proceeds of which, viz., £367, will be earmarked for additions to plant.

Rhodesian Section.

LATEST MINING NEWS.

The Shamva About to Commence Milling—Rhodesia Chamber of Mines—Umsweswe Asbestos—The Gwelo District—London and Rhodesian Company—Charterland and General—The Eldorado's Report—The Rhodesian Output.

It is expected that the Shamva Company at Abercorn will have a trial crushing of its new mill this month. The event will be a landmark in the history of Rhodesian mining, as the Shamva will operate what is easily the largest milling installation ever erected in Charterland, and results will be awaited with keen interest. The directors' report on operations at the Shamva Mine for the quarter ended the 30th September last contains the following:—Ore reserves: Total tonnage previously developed, 2,327,582 tons, value 5 dwts.; total tonnage developed during quarter, 78,214, value 5·26 dwts.; total ore reserves on hand to date, 2,405,796, value 5·01 dwts. Broken ore on surface, 188,559 tons; estimated value, 4·13 dwts. Development work: Very little is at present being done, as no air is available for drilling purposes, and progress by hand in the fourth level main adit is too slow and costly. Also ventilation without compressed air is impossible. About 50 feet only remains to be crosscut in the above adit before a connection is made with the winze from No. 3 level. As soon as air is available again about one month's work should suffice to complete this. Stoping: In September about 14,000 tons were broken, averaging approximately 3 dwts. This grade is slightly low, due to the inclusion of a good deal of over-burden at the extreme east end of the Prospect level. At the end of October the broken ore reserve was 209,439 tons, the average cost of breaking remains at approximately 1s. per ton. On the first and second levels nearly all boxes are complete and ready for dealing with a large daily tonnage, and all tracks laid. Construction work: Excellent progress has been made all round, and it is expected that a trial run of the mill will be made some time in January next. The power station, with the exception of the switchboard and connections, is practically finished. Labour: This has been plentiful all through the season, and has been mostly voluntary. It is at present ample, and it is hoped that no considerable shortage will ensue during the coming planting season. Supplies: Tenders for these for the general running of the plant are now being called for and gradually accumulated. Water: No anxiety has been felt over the water supply, a good stream is still running in both the Poorti and Mazoe Rivers, while the Inyagui River is running an exceptionally good stream. Crushing: The attention of the shareholders is called to the fact that the results of the trial crushing, and of probably the three first months' operations, are not expected to represent the anticipated normal profit-earning capacity of the mine, for the following reasons: firstly, owing to the fact that the grade of the broken ore which will during that period be sent to the mill is lower than the average mine grade; and, secondly, owing to the estimated preliminary absorption of gold in the tube mills, plates, zinc boxes, etc. It is possible, therefore, that the first months' running may show a loss, but that succeeding months should show a gradually increasing profit, whilst the normal output of gold should be reached during the fourth month.

* * * *

The certificate of registration of the Umsweswe Asbestos Syndicate, Ltd., has been received by the secretary from the Registrar of Deeds, Salisbury. Work was commenced last week, by the manager, but it has been, so far, confined to the building of huts and the cutting of a road through the forest to admit of wagons going to and fro. A start has been made with the main shaft, but it will be some days before much advance can be made.

The report of the Executive Committee of the Rhodesia Chamber of Mines for November states that the native labourers employed in Southern Rhodesian mines in October numbered 33,868. The distribution for the months of August and September was as follows:—

	August, 1913.	September. 1913.
Producing gold mines .	24,853	24,200
Non-producing gold mines ...	9,429	8,899
Coal and other mines	1,437	1,345
	35,719	34,444

* * * *

Last week's *Gwelo Times*, in a review of local conditions during 1913, has the following on the mining industry:—"This industry has suffered here as well as elsewhere in the country. Lack of money, not lack of gold, has in many cases accounted for the slump. In spite of this, a number of properties have been quietly going ahead, until to-day there is every hope that before long there will be a large body of small-workers around Gwelo. In the vicinity of the Shamrock Mine is quite a colony of mines at work, with good promises based on substantial returns. Undoubtedly Umvuma is one of the few live mining towns in Rhodesia at the present time. The progress in that town during the year, although seriously handicapped by fictitious rumours and moves on the share market, has made great advances, and in the very near future great things are to be expected. All the work done is of that permanent and solid type which assures us the Falcon Mine will be one of the largest propositions in the country."

* * * *

The following cable was sent to the London and Rhodesian Company in mail week:—Radnor: Total footage driven and sunk for November. 73. 300 foot level: Main west drive driven 20 ft., total 30 ft., assaying 1 oz. 5 dwts. per ton over 43 ins. Main east drive driven 19 ft., total 27 ft. assaying 18½ dwts. per ton over 51 ins. intrusion in face. Crosscutting south 16 ft. east driven crosscut 6 ft. assaying 5 dwts. reef in face. Winze sunk 21 ft., a total of 25 ft.; reef 51 ins. wide assaying 15 dwts. per ton.

* * * *

The report of the Charterland and General Exploration and Finance Company, Ltd., for the year to August 31 last states that, after providing for depreciation in Rhodesia and writing off 7s. 6d. per ton milled for mine development redemption, the profit at August 31 last, including the amount brought forward, amounted to £18,279. The directors recommend a dividend at the rate of 4 per cent. for the year, free of taxes, which will absorb £6,552, and that the balance of £11,727 be carried forward.

* * * *

The report of the Eldorado Banket Gold Mining Company for the quarter ended September 30 records no improvement in the affairs of this Rhodesian mine. The ore reserves show a further falling off, the total at the end of the quarter amounting to 46,457 tons of an average value of 14·1 dwts., as compared with 74,821 tons, worth 16·4 dwts. per ton, six months ago. Early in the year it was decided to reduce the tonnage of the grade of ore going to the mill from

June 30 to the end of the year owing to the shrinkage in the ore reserves, the monthly profit being reduced from £10,000-£12,000 to £4,000. It is anticipated that crushing can be continued on the present milling base until December 31, but as the Parallel Reef still continues unpayable on the 11th level, the engineers indicate that it will probably be found necessary to reduce the tonnage from about 8,000 tons to 4,000 tons a month—which would produce a monthly profit of £3,000—but no decision on the point can at present, it is stated, be arrived at. The profit for the quarter amounted to £12,411. The average value of the ore milled was 32s. 10d. per ton, the working costs averaged 22s. 3·9d. per ton, and the profit 10s. 6·2d. per ton.

* * * *

The following table shows the value of the monthly and annual gold outputs of Southern Rhodesia since January, 1911, together with the value of the annual outputs of other minerals:—

	1911.	1912.	1913.
January	£207,904	£214,918	£220,776
February	203,056	209,744	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211.413	234,408	243,452
June	215,347	226,867	240,303
July	237,517	240,514	249,302
August	243,712	239,077	250,576
September ...	225,777	230,573	250,429
October	218,862	230,072	247,068
November ...	214,040	225,957	239,036
December ...	217,026	218,661	
Total Gold ...	£2,641,897	£2,707,369	£2,648,581
Other Minerals...	242,863	257,230	237,821
Total Value ...	£2,890,759	£2,964,599	£2,886,402

UNION MINERAL OUTPUT FOR NOVEMBER.

Details of the Gold, Silver, Coal, and other Mineral Returns for the Union.

In November the mines of the Union produced minerals of the total value of £3,164,964, as against a total of £3,433,792 in October, a decrease of £268,828. The details of the production in November are as follows:

Gold	£2,865,273
Silver	9,516
Coal	171,317
Base minerals other than coal	118,858
Total value	£3,164,964

The output of diamonds is published half-yearly.

GOLD.

The following table shows the number of mines working in the various districts declaring gold and the district outputs for October:—

	No. of mines.	Stamps	Tubes	Output. fine ozs.
Witwatersrand ..	53	9,110	279	643.299
Heidelberg ...	3	105	2	6,453
Klerksdorp ..	3	69	2	4,172
Ottoshoop .	1	5	..	23
Barberton ...	11	192	3	7,003
Pilgrims Rest .	14	152	5	13,280
Pietersburg ..	3	25	—	285
Totals for Transvaal.	88	9,658	291	674,523
Totals for Cape ..	--			4
Totals for Natal ...	--	—	.	15
Totals for Union ...	88	9,658	291	674,542

COAL.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s. d.
Springs Brakpan .	4	52,713	36,297	5 6
Middelburg	16	391,656	340.222	4 4
Other districts	8	64,535	60,730	3 11
Totals for Transvaal ...	28	508,904	437,249	4 4
Totals for Cape	9	5,842	4.782	11 1
Totals for O.F.S.	5	60,100	51,944	5 8
Totals for Natal .. .	20	254,498	191,759	5 11
Totals for Union ..	62	829,344	685,734	–

COPPER AND TIN.

The following is a statement showing the output and shipments of copper and tin for November:—

COPPER.

	Tons.	Shipments.
Transvaal	704	£12,858
Cape	1,301	57,054
Totals for Union	2,005	£69,912

TIN.

	Tons.	Shipments.
Transvaal	356	£38,247
Cape	10	1,178
Totals for Union...	367	£39,425

OTHER MINERALS.

The sales and shipments of minerals, other than gold, coal, copper and tin, were:—

	Tons.	Value.
Asbestos	103	£1,673
Graphite	2	73
Magnesite	37	102
Lime	4,640	7,513
Flint	26	160
Silver in gold bullion (ozs.)... ...	75,963	9,516

LABOUR RETURNS.

The following statement shows the number of persons in the service of the companies and companies' contractors at the end of November:—

GOLD MINES.

	Whites.	Coloured.	Total.
Rand area	21,978	152,939	174.917
Other districts	931	10,741	11,672
Other Provinces	2	15	17
Totals for gold mines	22,911	163,695	186,606
Reef and alluvial diggers ...	154	838	992
Metallurgical works, etc. ..	26	188	214
Total for gold industry..	23,091	164,721	187,812
Diamond mines ..	5,269	39,412	44,681
Coal mines	1,406	24,417	25,823
Base minerals' mines ...	613	5,651	6,274
Lime and flint works	54	759	813
Grand totals ..	30,433	234,970	265,403

ACCIDENTS.

During the month 241 accidents occurred in the mines throughout the Union, as a result of which 13 white and 72 coloured workers were killed, and 17 white and 173 coloured workers injured.

INVESTORS' DIARY.

Jan. 23 —Witbank Colliery.
March 31. -Cassel Coal Co.

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THE YEAR WITH THE VAN RYN GOLD MINES ESTATE, LTD.

A Period of Continued Prosperity—£237,500 in Dividends—Upwards of Two Million Tons of Ore Reserves—Mr. Leopold Albu on the Labour Question.

THE eighteenth ordinary general meeting of the Van Ryn Gold Mines Estate, Ltd., was held at Winchester House, Old Broad Street, London, E.C., on Wednesday, December 17, 1913, at 12 o'clock noon. The Chairman (Mr. F. A. Gillam), who was received with cheers, said: Gentlemen,—The first business before this meeting is to receive the directors' report and accounts for the financial year ended June 30 last, of which a copy has been forwarded to all shareholders, and which, following our usual practice, I shall accordingly ask your permission to take as read. As you will have seen, the accounts before you record a period of continued prosperity to an extent which renders the duty of moving their adoption—a duty which has devolved upon me uninterruptedly for a period of 18 years, indeed, since the presentation of the directors' first annual report in December, 1895 not only an easy one, but one of unmixed satisfaction to me personally. The accounts are presented in a form with which you are very familiar, and though they appear to call for no lengthy or detailed examination on my part, there are matters in them upon which, doubtless, a few words of comment may be desired. Turning first to the profit and loss account, it will be seen that from a total of 456,190 tons crushed gold has been won to the amount of £637,788 (or a fraction under 28s. per ton) at a cost of £364,868 (or 16s. per ton), leaving a net profit from mining operations of £272,920, or at the rate of 12s. per ton treated. This mining profit compares with £276,235 earned during the previous year, and represents a shortage of £3,315 due to circumstances to which I shall presently have occasion to refer. On the other hand, it is supplemented by additional revenue to the extent of £15,933, or £9,300 in excess of the corresponding figure of a year ago. The result is that our revenue from all sources amounts to the handsome total of £288,853, or approximately £6,000 in excess of last year's figure, and constitutes a record in the history of the company. Two factors have contributed to the increase to which I have alluded in the amount received by way of additional revenue as compared with that of last year. The first is the state of the money market, which has enabled us to secure upon our constantly increasing balance of cash in hand—until such time as it is distributed among you in the form of dividends—a favourable rate of interest, considerably higher than the average we have been accustomed to obtain, and the second is the direct result of our policy of charging to working costs a sum for mine development more than sufficient to cover our actual expenditure under that head. The effect of this is that after paying all outgoings sufficient to maintain our ore reserves at approximately the record figure attained last year, we have an unexpended balance of upwards of £8,000 with which to supplement our profit and loss account, the unappropriated balance of which is thus shown to be £288,853.

THE LARGEST AMOUNT EVER PAID IN DIVIDENDS.

How this balance has been disposed of is shown both in the appropriation account, and again in the second paragraph of the directors' report. It will be seen that, after appropriating approximately £50,000 to the upkeep of our mine equipment and to depreciation, and in payment of taxes, and after providing £237,500 for dividends—the largest amount, by the way, which it has been our privilege to distribute in any one year since the payment of dividends commenced—there remains a balance available to be carried forward to the current year of £18,200. An annexure to our report, and one which, I am sure, cannot fail to be of interest to shareholders, shows that we have declared 19 dividends to date (of which 18 are in consecutive half-years commencing in December, 1904), amounting in the aggregate to £1,694,500, or at the rate of 352½ per cent. (£3 10s. 6d. per share) upon the capital for the time being paid up.

THE STRIKE OF WHITE MINERS

The cause which directly contributed to the shortage in mining profits of £3,315, of which I have already spoken, and to which I said I should have occasion to revert, was, you will have gathered from the reports before you, the strike of white miners which, unfortunately, occurred on the 19th June last, and which, while it lasted, brought our business to a standstill. Why our property should have been singled out of so many for the unwelcome attention of the strike leaders, it is difficult to say, particularly in view of the fact that, as pointed out in the acting manager's report before you, "no quarrel or dispute of any description existed at the time with the management, but that the men came out in sympathy with the employees on strike at a neighbouring mine." That the policy of this strike was by no means popular but was, as I have reason to fear, the direct outcome of intimidation from outside, is evidenced by the fact that of a complement of 210 white employees less than 40 per cent. could be found to support it, the numbers on a secret ballot being taken being: For, 80; against, 127; spoiled, 3; total, 210. In spite of this, however, other and more sinister counsels prevailed, with the result that our men, without any known grievance, and certainly none which the management were not prepared to investigate, and where legitimate, to remove, I say,

OUR MEN AGAINST THE WISH OF THE MAJORITY,

as expressed by their free vote, were induced to leave their employment with consequences both to themselves and to us as their employers which such a suicidal policy invariably entails. Nor, as was generally foreseen, could a strike of white miners fail to be without its effect upon the native employees, among whom it produced a spirit of unrest which manifested itself in large numbers of those whose contracts had expired demanding their discharges. The effect of this, added to the enhanced difficulties of recruiting which the strike engendered, was to produce a marked shortage in the number of our native employees as compared with our normal complement, from which we are still suffering, though, fortunately, in a constantly decreasing degree. Apart, however, from this secondary consideration, our loss was happily limited to the pecuniary one involved in a temporary suspension of operations, and did not extend to any material damage to our property, a contingency which at any moment might have been translated into a fact. Our immunity in this respect we believe to have been largely due to the foresight and energy of the management on the spot, under the able direction of the acting managing director (Mr. George Nathan), and I am sure you will agree that the board has done well in placing upon permanent record its appreciation of his services in this connection Before passing from this subject, I cannot refrain from adding that there is no grievance, imaginary or otherwise, to which, on its being brought to our notice, we are not prepared to give sympathetic consideration and, reasonable regard being had for local conditions governing the industry, where necessary to remedy in the interests of our employees.

THE PHTHISIS FUND.

Upon one further point arising out of the appropriation account—I refer to the item under the heading, "Mining Phthisis Compensation Fund"—a word of explanation may not be undesirable seeing that it appears in our accounts for the first time. Under the Miners' Phthisis Act, 1912, two separate funds are constituted: (1) The compensation fund, to deal with cases which have originated in the past and the liability in respect of which is to be met by quarterly instalments until such time as the awards under the Act, whether they be in lump sums or by way of annuity, have been discharged; and (2) the insurance fund, which, as the term implies, relates to the cases arising in the future, the liability in respect of which is to be met by an additional assessment based upon the earnings of the underground white employees, of which one moiety is to be borne by the employees themselves. Though the Act necessarily imposes an additional burden upon the mining industry, it is one which you will agree will be cheerfully borne if its evils is in any degree to alleviate any of the attendant evils associated with it.

ORE RESERVES.

In connection with our balance sheet two satisfactory features stand out prominently, viz.: (1) The maintenance of our ore reserves at upwards of 2,000,000 tons of fully developed ore, which at our present rate of crushing exceeds four years' supply to the mill, and which, as shown by the manager's report, is of the average value of 6·5 dwts., or £1 7s. 8d. per ton. These, as will be seen, stand in the balance sheet free of cost, the whole of this vast tonnage having been paid for out of the past profits; and (2) the strength of our financial position as revealed by the fact that whereas our capital and reserve is invested in our business, the whole of our liabilities, including the unappropriated balance of profit and loss account, is represented either in cash or by gold in transit. This is a position which, as you will agree, is eminently satisfactory. One other event during the year has occurred on your property, and that is the deproclamation of the northern section. You are all aware that we own the freehold of a large amount of land north of the mynpacht, where operations are conducted, upon which hitherto a considerable number of claim licences have been held by outsiders. After thoroughly prospecting this area we have become convinced that there are no payable reefs in this section, and, as it was impossible for us to use the ground as long as it was held under claim licences, we applied to the Government to have the whole area deproclaimed. After some delay our petition was granted, and the area, nearly 8,000 acres in extent, reverts to us to do what we think fit with.

ECONOMIES IN LONDON ADMINISTRATION.

Since our last meeting the change of which we then advised you in our secretarial arrangements has been effected. We have moved to offices on the ground floor of this building, with the result that an economy in administration has been effected, which is partly reflected in the account before you, and which will still further make itself felt in the accounts for the curent year. You thus see that, although we are more prosperous than ever, we are not unmindful of your interests in the matter of economy of work.

DECLARATION OF INTERIM DIVIDEND.

I have very little further to add, gentlemen, except to state that operations at your mine since the close of the financial year have been quite satisfactory, notwithstanding the temporary setback due to the recent strike and the subsequent shortage of native labour Consequently I am happy to be able to announce that, in the opinion of the board, the position justifies the declaration of an interim dividend of 22½ per cent., or 4s. 6d. per share. Warrants for this dividend will, following our usual practice, be posted to all shareholders on the London register on January 10 next. This dividend, you will note, is at the same rate as that declared at the corresponding period last year, and this in spite of the falling off of profits resulting from the dislocation of work after the strike.

MANAGING DIRECTOR AND STAFF THANKED.

That, gentlemen, concludes the remarks I have to make to you to-day, but before sitting down I am sure you would wish me to offer the hearty thanks of the shareholders to the managing director and his staff at the mine for the excellent results which have been attained, and which are reflected in the report before you. It is largely due to Sir George Albu and to his able management of the affairs of your company in South Africa that, in spite of strikes, shortage of labour, and the inefficiency resulting directly therefrom, we are again able to show such satisfactory results for the past year. I shall be glad if, later on, one of the shareholders present will be good enough to move a resolution to this effect. I have now much pleasure in moving that the report and accounts as submitted at this meeting for the year ended June 30, 1913, be received and adopted, and I will call upon Mr. Leopold Albu to second the motion.

SHAREHOLDERS HAVE EVERY REASON TO BE SATISFIED.

Mr. Leopold Albu, who was cordially received, said: Mr. Chairman and gentlemen, it affords me great pleasure indeed to second the motion for the adoption of the directors' report and accounts. You will agree with me, I am sure when I say that you have every reason to be well satisfied with the results of the past year. The position of the affairs of your company as revealed by the report and balance sheet is so satisfactory as to require no emphasis on my part. Your Chairman has in an able manner explained the particular items, and given you all the information which he considered might be of interest to you, and assist you in more fully appreciating the strength and potentialities of your company, which have enabled us in spite of the vicissitudes which confronted the industry during this year to easily maintain the dividend to which you have grown accustomed. When I had the pleasure of addressing you last year, and in fact at many previous meetings, I expressed the conviction that we had every cause to be hopeful for the future, and I based my confidence on the following grounds. Firstly, the continuance of satisfactory developments in all sections of the mine; secondly, the sound position of our fully developed ore reserves; thirdly, the fact that the mines working on the dip of your reefs, and those adjoining yours on either side, were all giving equally good results—thus establishing without a doubt the payability of the whole of your mine to its boundaries; and, fourthly, as no further capital expenditure of any magnitude was anticipated, practically all future profits would be available for distribution to shareholders, and for the further strengthening of its financial position.

A FORECAST THAT WAS JUSTIFIED.

You will admit results have proved that my confidence was entirely justified, and I have no reason in any way to alter my views as to the future. In fact I am hopeful that we shall do even better when once the effects of the recent labour troubles have been eliminated, and the influx of Kaffir labour becomes normal again. I took occasion last year to dwell at some length on the formation of the Native Recruiting Corporation, and I pointed out the beneficial effects it would have on the working of our industry. During the first six months this new organisation was in operation the benefits manifested themselves in a striking degree. Labour began to flow in in increasing numbers, the mines once again began to work under normal conditions, and the good effect was immediately shown by considerably increased profits all round. We looked forward, and with good reason, to great developments of our industry, and to a gradual return to that prosperity and confidence which have been absent for so long, and which is of such vital importance to the whole of South Africa.

THE STRIKE OF WHITE MINERS.

Unfortunately, this budding hope was suddenly dashed to the ground by the ill-advised and unjustifiable strike of the white miners which subsequently degenerated into open revolution. This event was, to say the least of it, calamitous—and in its general effect can hardly be compared with a similar labour disturbance in Europe. All recruiting of Kaffir labour had to be discontinued, the time-expired natives were not replaced, and since the strike some 60,000 Kaffirs, out of a total of something over 200,000 employed, have left the mines for their homes. You will readily understand what this means to an organised industry such as ours, and you will realise the enormous difficulty under which we have laboured ever since. It is a poor consolation to know that the white miners have had their fair share of its consequences, as a large number have necessarily lost their employment, when we consider the incalculable loss caused to the industry and to South Africa, not only of money, but of prestige and confidence. I hope the white workers on the Rand will thoroughly appreciate this lesson, and will in future hesitate, and refuse to be led astray by irresponsible agitators and professional firebrands. They must realise that the real workers on whom the success of the industry depends are the Kaffirs. If they destroy their activity, or frighten them away by ill-advised and selfish actions, they as surely lose their own occupations in the mining industry, and destroy their means of livelihood which it will interest you to hear is on a considerably higher level than in Europe or in any other mining centre of the world.

WATER SUPPLY.

In my remarks of last year I touched upon the question of the water supply of the Rand, and mentioned that a catchment scheme had been approved, which would ensure a permanent supply of water, covering all the requirements of the mines and municipalities along the Reef. This matter has now been advanced a stage further by the adoption of a scheme to erect a barrage on the Vaal River, which will impound some ten thousand million gallons of water, and to pump it to the Rand —a distance of some 30 miles. Ten million gallons per day will be available from this source to supplement the supply of about 10,000,000 gallons from the existing sources of the Rand Water Board. On the completion of this scheme the water question will have been definitely and permanently settled. There is nothing else of interest for me to add, gentlemen, except to express the wish that the coming year will dispel the black depression which has gathered over financial conditions generally, and enable the progress of development the whole world over, and of South Africa in particular, to be resumed.

The Chairman here invited the fullest discussion.

Mr. A. V. Neville: Mr. Chairman, I am sure that all the shareholders present here to-day, as well as those who are absent, will unite in adopting your suggestion, that the best thanks of the shareholders be offered to the directors and the staff for the satisfactory results which have been obtained. These results are the more gratifying and satisfactory, seeing that, throughout the whole of South Africa, there has been so much unrest with regard to the labour question. To my mind, I think it is extremely gratifying that there is one great company in the City of London, where, at its meeting, not a single shareholder can rise and say a word in condemnation of anything connected with the company. Not only can he not say anything in dispraise, but he must, if he be a properly constituted shareholder, feel highly pleased with the result of his investment. I would like you, Mr. Chairman, to make a pronouncement as to the cause (if there is any) of the present low price at which our shares stand in the market, whether the cause is attributable to anything connected with the mine, or whether it is merely a reflex of the stagnation which prevails in the stock markets generally. I think if you could tell us something unambiguous, and if the gentlemen of the Press would report it, no doubt potential shareholders, looking out for bargains, would be attracted by this very sound investment, and our shares would reach a price at which, in my opinion, they ought to stand.

Mr. Anderson: I read that the railway connection, Benoni and Welgedacht, is in course of construction, and I would ask—is it expected to be completely finished by the end of the current year? Will that benefit this mine in any way? No explanation of that is given in the report.

Mr. E. G. Peacock: As one of the oldest shareholders of this company, I think I can give to the former speaker some agreeable information connected with his question. I would refer him to the leading article in *The Times* of last Tuesday, December 16, of which I will only read the first two or three lines, and the last two or three lines: "Van Ryn reports a record year since it resumed the payment of dividends, with 20 per cent. The Van Ryn Gold Mines Estate has never looked back." I will not go into the figures, which you all know, but finish with this: "If the position of many other companies were equally satisfactory, the Kaffir market would not remain in its present depressed state." I think, Mr. Chairman and gentlemen, that our great satisfaction in attending this annual meeting, and in reading the monthly reports sent out, is that we know they

EMANATE FROM A TRUSTWORTHY AND SAFE SOURCE.

I am sorry to say I have lately attended the meeting of another company, in which the reverse was the case. I think we all know that, in dealing with the Van Ryn Company and its board, we wash our hands in clean water, and whether the shares go up or go down, we know it is an honest undertaking. On behalf of myself and other shareholders, I beg to offer you our sincere thanks. I had hoped to-day that the dividend might have been 5s. instead of 4s. 6d., and I thought, perhaps, the directors would have yielded on this point, but probably they have held back the sixpence in case of eventualities, but I believe they are in a position to pay it, if they so wish. I have not taken up much of your time, but I think I have put the dots on the i's.

A SHAREHOLDER'S AGREEABLE SURPRISE.

Mr. Vere H. Smith: As a shareholder, I was immensely pleased, and somewhat surprised, to receive this year such an excellent report on our property, because after all the troubles and trials through which South Africa has passed during the last year, I expected even the Van Ryn might not be able to put before us such a good report as before. As regards the dividend, I must say I do not agree with the previous speaker. Of course, we all like to receive as much as possible, but, at the same time, some of us are rather cautious, and I think the directors have displayed caution—wise caution—in not increasing the dividend they paid us this time last year. I know the dividend in the interval was rather higher. I think a company of this description, which has 2,000,000 tons of ore, of the value of £1 7s. 6d. per ton, which is equal to a four years' supply for our mill, taken in conjunction with the payment of splendid dividends, such as we have received for years, must be a source of great satisfaction to the directors as it is to us shareholders. Of course, we must not lose sight of the fact that there has been this great labour trouble during the past 12 months, or that many other troubles have taken place in South Africa. Now, although this labour shortage does not seem to have materially affected this company, it has affected many mines in which some of us may be interested in connection with the General Mining and Finance Corporation, in South Africa.

LABOUR SHORTAGE.

What is going to be the panacea for this evil? We have been told that, provided satisfactory hand rock-drills could be invented, that these might be a panacea. We see in the papers sometimes that one rock drill and another rock drill have been tried, but I would like to ask Mr. Leopold Albu whether, in his opinion, and in the opinion of his advisers in South Africa, a really satisfactory hand rock drill has yet been found. It does occur to me, and will occur to many interested in South African mines, that a panacea for this evil of shortage of labour would be the re-introduction of the Chinese. I consider the Chinese ought never to have been repatriated. Their re-introduction would be the best panacea (and I cannot help thinking so as a layman) for this malady. Will Mr. Leopold Albu tell us whether he considers that the Government of South Africa could, if they chose so to do, re-import the Chinese, without seeking the authority of the Imperial Government. Before sitting down, I would like to add my thanks to those of the other shareholders to the management on the spot and in London for their services during the past year.

Mr. Neville: I should like to add a suggestion to my former remarks—but first let me say that I feel quite sure you have acted rightly and well by making the dividend 4s. 6d. instead of 5s. No doubt it was a measure of very proper precaution, but I was going to suggest that if affairs turn out satisfactory and better than you expect, whether the sixpence that has been spoken of might not be added to the dividend at some time in the near future. When our next dividend comes due, should it be 5s. 6d. instead of 5s. we shall all be highly delighted.

CHAIRMAN'S REPLY.

The Chairman: As to the price of the shares, it is simply the reflection of matters on the Stock Exchange. There is nothing so far as regards the mine that we know of that would justify the present low price. I can but thank Mr. Peacock for his remarks. He favoured us in like manner on a previous occasion. Both he and Mr. Neville may be sure that, as soon as we can, we will give you an increased dividend; whenever we think we can do so with caution, it will be done. I will ask Mr. Leopold Albu to answer the question about the rock drills. One suggestion is that the fly in the ointment, which was referred to last year, does not now appear to be so big.

ROCK DRILLS.

Mr. Albu: Several rock drills have been introduced on the Rand, and with a more or less reasonable amount of success, but the objection, of course, always has been the great cost of maintenance. With these small machines, there is enormous vibration, and they become useless in a very short time. That has been their great drawback; otherwise, rock drills are employed, but the maintenance of the smaller ones is too great. We are trying one now on our mines—the Leyner air drill, about which we have recently received some satisfactory reports, but it is far too soon to form any definite opinion about it. I see that another group is trying the Atlas drill, of which they speak very highly, but also in this case it requires a great deal of experience to form a definite opinion. I am quite convinced of one thing, that, sooner or later, a suitable rock drill will be introduced. I am of this opinion, because it will be an enormous fortune to its inventor, and it will be a great saving to the mines. It will, in fact, create a revolution—not like the "revolution" I referred to in my speech—in the conduct of the industry. I should not be at all surprised with such a drill placed at our disposal, if the working costs would be enormously decreased, and our requirements for Kaffir labour be almost cut down to a third. That would solve this awful question of labour.

Mr Smith: What about Chinese labour?

CHINESE LABOUR.

Mr. Albu: I daresay you have followed my remarks on Chinese labour for many years, and must, therefore, know full well what I think of it. I thought it was a disastrous thing for South Africa—not only for the industry but for South Africa as a whole—for one Government to allow the introduction of Chinese labour and let our calculations be based on such an assumption, and that this labour force should, all of a sudden, have been taken away. You can understand what that means to an industry, or in any office. It was an awful thing to do. I do not think South Africa really wanted to get rid of the Chinese, but it was more the influence here in Europe that was at work than anything else. Although I am a Liberal, I condemned this policy most certainly, because our own fellow-subjects are allowed to go to Natal and other Colonies, as indentured labour, and the Government have not put their feet down against that. Chinese labour is, in my opinion, much superior to any I have met with before. I am not a politician myself, and I do not know the workings of these people's minds, but am convinced of one thing—that we ourselves will never allow Chinese labour to be reintroduced. We have had so much political trouble, and it has cost the industry so many millions of money, first to introduce and then to repatriate this class of labour, that we, as an industry will never countenance the reintroduction of Chinese labour.

THE POSITION OF FRANK SMITH DIAMONDS.

Report of Recent Annual Meeting.

The thirteenth ordinary general meeting of the Frank Smith Diamond Estates and Exploration Company, Ltd., was held in London in mail week. Mr. E. Turk presided, and moved the adoption of the report for the year ended June 30 last. He said they had now reached the point when they could well assume they had surmounted their chief difficulties, and when they could look forward to the future with a fair amount of confidence. The period covered by the report had been mainly occupied with shipping the plant to the property and erecting it at the mine. The delays which they had had, and which were largely the result of the after-effects of the coal strike in this country, had affected them in two ways. Firstly, they had postponed the date on which they were able to commence washing operations; secondly, they had caused a good deal of additional expenditure, because the management was compelled to retain on the property the staff of white mechanics, who for periods were only partially occupied whilst waiting for the arrival of sections of the plant. Washing operations were suspended from September 6 to October 6. A glance at the returns obtained before and after showed that there was a distinct improvement in the running of the plant. The average number of loads passed through the washing plant between July 1 to September 6 was 1,027 loads per working day. In October, the average was 1,516 loads. During last month it had further increased to an average of 1,833 loads. They were now advised that, from the middle of this month, the managing director expected to handle approximately 20,000 loads per week, which would get them pretty near their full capacity. He need not emphasise the fact that the delays which they had had to face, firstly, owing to the tardy delivery of the plant, and, secondly, in order to effect the necessary adjustments, had made greater inroads upon the working capital than could originally be estimated. In order to meet the deficiency as far as they could judge at present, they approached the Johannesburg Consolidated Investment Company, who had agreed to advance the sum of £10,000 at the low rate of 5 per cent., provided that the advance be guaranteed by Messrs. Barnato Brothers and Messrs. L. Ehrlich & Co., who were their largest shareholders. This guarantee had been consented to by these two firms. Shareholders would remember that when two years ago Mr. McLelland recommended the re-opening of the Frank Smith Mine, he estimated the probabilities as follows:—Yield of the mine, 4 carats per 100 loads; average value per carat, 70s.; working costs, 1s. 6d. per load. Mr. McLelland had treated from July 1 to November 30 a total of 134,058 loads for a recovery of 5,351. This was an average of almost exactly 4 carats per 100 loads, and therefore bore out his original estimate. In a recent letter Mr. McLelland stated that he was going to make a careful test of the tailings, and it was hoped that, when his engineers obtained greater experience with the working of the pulsators, an improvement would be obtained. Of course, the actual test of the value of their stones would be by sales, but, in the meantime, they had a fair indication of the probable value from the valuations which they had made in South Africa, before the diamonds were shipped to this side. It would not be good policy if he were to give any details of these valuations, but he thought he could safely say that the average valuations of all their shipments to the present date was within 5 per cent. of the 70s. upon which they calculated from the beginning. Mr. A. R. Stephenson seconded the resolution, which was carried unanimously.

Zaaiplaats Tin.

Results for the month of December, 1913. Days run, 24·4 days; ore milled, 3,151 short tons; residues re-treated, 195 short tons; concentrates won, 104 long tons; average value of concentrates 69·1 per cent. M.T.; estimated profit for the month, excluding Government tax on profits, £6,116 5s. 10d.; less adjustments in respect of estimated values of previous shipments, £6 1s. 6d.; profit declared for the month, £6,110 4s. 4d.; capital expenditure, nil. The reduced output is due to the cessation of milling operations for two days, owing to the armature of the main generator having been burnt out as the result of a lightning flash.

THE WEEK IN THE SHAREMARKET.

Nervous Owing to Labour Crisis—Awaiting Developments.

The whole market remains weak, owing to the Labour crisis, and practically no business is being done. The dominating factor is, of course, the uncertain Labour outlook, and until things take a turn for the better it is unlikely that any change will be seen. If the railway strike continues, there is no saying how soon and to what extent the industry of the country may be paralysed, and at the moment of writing the outlook is far from reassuring. The few fluctuations in prices during the week, due to the varying views of the seriousness of the outlook, are shown below: –

* * * *

	Fri., 2nd.	Sat., 3rd.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.
Adair-Ushers	—	0 3*	—		-	0 9†
African Farms	14 9	14 6	14 9	14 3*	13 9*	14 0
Apex Mines	19 0†	18 0*	18 0	18 0†	15 6*	—
Bantjes Consolidated	—	—	15 0†	13 4†	13 3†	- -
Benoni Consolidated		2 0*	—	2 0*	2 3†	—
Brakpan Mines	—	—		47 6†	47 6†	—
Breyten Collieries	—	25 3*		—	—	25 0*
Bushveld Tins	0 7†	0 7†	0 7†	0 7†	0 7†	0 7†
Cinderella Cons.	3 6*	4 6*	4 9*	4 9*	—	—
City and Suburbans	40 9*	40 6*	40 6*	40 0*	40 6	40 6
City Deeps	51 0*	51 3*	52 0	51 6*	50 6*	52 0
Cloverfield Mines	4 0*	4 3	4 1	4 1*	4 1	4 0
Clydesdale Collieries	—	—	—	—	8 0*	
Cons. Investment	—	17 0*	17 0*	18 0*	17 6	17 6
Cons. Langlaagtes	28 0†	27 0*	26 6*	26 6*	26 3†	25 3
Cons. Main Reefs	—	16 3*	16 3*	16 9	15 6*	15 0
Cons. Mines Selection	—	—	7 0*	7 0*	—	—
Coronation Collieries	11 6*	11 6*	—	11 6*	11 6*	11 6*
Coronation Freeholds	0 5*	0 5*	0 5*	0 5	0 5*	0 5*
Coronation Syndicates	—	—	—	3 3	3 9†	—
Crown Diamonds	8 0*	8 0*	7 6*	7 6*	7 0*	7 6*
Doornhoek Tins	6 0†	—	6 0†	—	5 0†	5 0†
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	7 9*	8 0*
East Rand Coals	1 8*	1 9	1 9*	1 9*	1 9*	1 9
East Rand Deeps	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
East Rand Props.	37 6*	36 3*	37 0*	37 0*	36 0	36 6
East Rand Debentures	—	£85†	£85†	£85†		—
Eastern Gold Mines	1 0*	1 0*	1 0*	1 0*	1 0*	
Frank Smith Diamonds	6 6†	6 0	6 0	5 7	6 0†	5 0*
Geduld Props.	20 9*	21 6†	21 0*	21 0	20 0	19 6*
Glencoe (Natal) Collieries	—	—	—	7 3†		—
Glynn's Lydenburgs	11 0*	11 3*	11 3*	12 6	12 6*	12 6
Government Areas	18 0	17 9	18 0	17 9	17 6*	17 0
Jumpers	—		—	2 6*		4 0†
Jupiters	4 3*		4 3*	4 3	4 3	4 3*
Kaalfontein Diamonds	0 6†	0 6*	0 6*	0 6*	0 6*	
Klerksdorp Props.	—	1 10*	1 10*	1 10*	1 10*	1 10*
Knight Centrals	7 1*	7 0	6 9*	7 0	6 9*	6 7*
Lace Props	2 6*	2 6*	2 6*	2 6*		2 5*
Luipaardsvlei Estates		10 0†	10 0†	10 0†	10 0†	—
Lydenburg Farms	2 9*	2 11†	2 11†	2 6*	2 10*	
Main Reef Wests	—	- -	—	—	5 9*	—
Main Reef West Debs.	£62½*	- -	£62½*	£62½*	£61*	

*Buyers. †Sellers.

	Fri., 2nd.	Sat., 3rd.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.
Middlevlei Estates	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Modderfontein B.	80 0†	75 0*	—	—	77 0†	75 0*
Modderfontein Deeps	37 3	36 6	36 0	35 9*	34 6	34 3
New Boksburgs	0 10*	—	—	1 0†	0 10*	0 10*
New Eland Diamonds	27 0*	27 0*	27 0*	27 9*	27 0*	27 0*
New Era Cons.	6 0†	5 6	5 0*	5 0*	5 0*	5 0*
New Geduld Deeps	1 9	2 0†	1 9*	1 9*	1 9*	1 9*
New Kleinfonteins	20 0*	20 6	20 6	20 0*	20 0*	19 9*
New Rietfonteins	4 0†		—	—		—
Orange Diamonds	1 8*	1 7*	1 6*		2 0†	1 7*
Piggs Peak	—	9 0*	9 0*		—	9 0*
Pretoria Cements	41 0*	41 0*	41 0*	41 0*	40 0*	—
Princess Estates	—	4 0*	—	—	—	—
Rand Collieries	—	—	—	1 9*	—	—
Rand Klips	1 10	2 0	2 0*	2 0*	1 11*	1 11
Rand Nucleus	1 6*	1 6*	1 6*	1 6	1 6*	1 6*
Randfontein Deeps		2 9	2 6*	2 6*	2 9*	—
Randfontein Estates	—	22 6*	—	—	—	—
Robinson Deeps	27 6*	—	27 6	29 0†	—	27 6*
Rooiberg Minerals	—	24 6†	22 6*	22 6*	21 6*	23 0*
Durban Roodepoorts	—	10 0*	10 0*	10 0		
Ryan Nigels	—	3 0*	3 0	—	—	3 0*
Shebas	5 3*	5 3*	5 0*	5 3	5 0*	—
Simmer Deeps	1 0*	1 0*	1 0*	—	—	—
S.A. Lands	2 9*	2 9*	2 10*	2 10*	2 10	2 9*
Springs Mines	11 6*	-	11 0*	11 0*	10 0*	10 0
Steyn Estates		8 9*	—	—	—	—
Sub Nigels	7 6		7 6*	7 9*	7 9	—
Transvaal and Delagoa		-	27 6*	27 6*	—	
Transvaal Coal Trust	30 0†	30 0†	28 0*	28 0*	—	
Transvaal Cons. Lands	19 0†	19 0*	19 0	19 0*	19 0*	19 0*
Transvaal G.M. Estates		48 0†	48 0†	46 6*	47 0†	—
Tudors	2 0†	—	—	—	—	—
Van Ryn Deeps	34 0	33 6	33 3*	33 3*	33 0	33 0
Village Deeps	34 0†	—	—	32 6*	—	—
Vogel Cons. Deeps	—	0 6*	—	0 6*	-	—
West Rand Cons.	—	7 0*	—	7 0*	—	—
Western Rand Estates		—		—	1 9†	—
Witwatersrands	70 0†	66 0*	—	65 0*	—	67 0†
Wit. Townships	19 0*	19 0*	19 0*	—	—	19 0*
Wolhuters	-	12 6†		12 0*	11 6*	11 0
Zaaiplaats Tins	30 6*	30 0	30 9*	30 0*	28 9*	27 9*

*Buyers. †Sellers.

East Rand Proprietary Mines.

The following are the results of the December operations at the East Rand Proprietary Mines:—820 stamps milled 127,600 tons; 49,934 ounces of fine gold recovered; valued at £209,474, including 1,621 ounces valued £6,806 recovered from accumulated slimes. Profit for the month, £75,010, including £4,900 profit from treatment of accumulated slime. The decrease in profits is due to the shortage of native labour, which still remains most unsatisfactory.

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Engineering Notes and News.

THE CONTINUOUS SAND PLANT IN CYANIDE PRACTICE ON THE RAND.

MR. E. L. BATEMAN writes to *Metallurgical and Chemical Engineering* as follows:—In your issue of July, 1913, appears an article by Mr. H. N. Spicer in regard to Rand methods, and under the heading "Cone Classification of Sand and Slime," Mr. Spicer refers to rotary vacuum filter tables of local invention in use at the City and Suburban G.M. Company, and alleges certain disadvantages in connection with the use of these tables. The tables referred to, and also the special type of cone used in conjunction with same, are the invention of Dr. W. A. Caldecott, and the method of handling sand by means of table and cone in the manner described is known as the "Caldecott continuous sand plant," and as the writer has had a great deal to do with the installation of these plants, as Dr. Caldecott's representative, he would like to comment upon Mr. Spicer's article. The alleged disadvantages, as stated, are based on faulty premises. *Loss of Head.* Mr. Spicer seemingly overlooks the fact that 85 per cent. of the total weight of pulp, in the shape of slime and water, overflows the diaphragm cones, and return-sand cones above the filter table, and the total loss of head of this amount of pulp is only about 2ft., which can hardly be considered a serious matter. The remaining 15 per cent. of the pulp is the only part which has any considerable loss of head, as it is this amount of the total pulp which is delivered as a thick candy pulp from the underflow of cones on to the sand filter table. These percentages are based on ordinary Rand conditions of 5½ parts water to one of solids in the pulp from the mill, and with cone underflow containing not more than 30 per cent. of moisture. The sand delivered by underflow of cone amounts to 50 per cent. of the original solids; the other 50 per cent. being slime which overflows cones. The disinclination to any loss of head requiring elevation and return of a portion of the pulp in a reduction works, whatever advantages may be derived therefrom, and however advantageous it may be found elsewhere, is quite a marked feature of the older American and Mexican ore-treatment practice, and is, apparently, due to the fact that, in the early days, the side of the hill was always selected as the site for the reduction plant, and full advantage was invariably taken of the use of gravity for transferring pulp from one stage of treatment to another, and any departure from the gravity system has been adopted very slowly and cautiously, but in the more modern American and Mexican plants there is a growing tendency to the use of circuits in milling, especially in tube-milling, and the use of a circuit necessarily means the re-elevation of some part of the pulp. In connection with this matter the article by Herbert Lang in the July 5 number of the *Mining and Scientific Press*, page 7, is of interest as showing the trend of modern metallurgical practice. In regard to the double treatment mentioned by Mr. Spicer, I presume he refers to the use of return sand cones, but, as stated above, the use of these cones only involves the loss of about 2ft. of head on 85 per cent. of the total pulp. *Sand Filter Tables.*—The cost of operating Caldecott tables at the City and Suburban G.M. Company, referred to in Mr. Spicer's article, expressed in American currency, is as follows:

	Per ton of sand.	Per ton of ore.
Power	2·36 cents.	1·31 cents.
Maintenance	0·43 cents.	0·23 cents.
Labour	0·58 cents.	0·33 cents.
Totals	3·37 cents.	1·87 cents.

The value of the original sand is 3·52 dwt., and the value of the residue is 0·371 dwt. It will be seen from the above figures that the metallurgical efficiency of the system is high, and that the cost of power and maintenance is very small, which is due, principally, to the fact that the table revolves at a very slow speed, viz., one revolution in three minutes. In regard to the cleaning of filter cloths, this work is performed in half an hour by two natives. *Necessity for Two Tables.* While in all continuous operations it is desirable to be able to cut out a unit periodically, still it has been found possible, on the Princess Estate and G.M. Company, to work with one filter table and yet obtain most satisfactory results under proper supervision, as can be seen by reference to Mr. H. A. White's contribution to the discussion on "The Metallurgy of the Homestake Ore," which appears on page 55 of *Bulletin* No. 100 of the Institution of Mining and Metallurgy. In Mr. White's article he shows that the sand residue at the Princess Estate, over a period of three months, had an average value of 0·23 dwt., so it can be seen that the use of one table only gave excellent results. Mr. White's article also shows the extremely low value of last drainage solution of 0·05 dwt., and this is due to the fact that, by the Caldecott system, the slime is completely eliminated, resulting in very clean sand. At the Princess Estate the sand treatment is what is termed "single" treatment, *i.e.*, the extraction of gold from the sand is completed in the vat into which the sand is transferred from the filter table, and the residues are so low that they would not pay for transferring into another vat for the purposes of being given a further treatment. The advantages claimed for the Caldecott patent continuous sand plant are as follows: (1) Efficient classification of sand and slime in tailing pulp. (2) High percentage of slime which can be treated by cyanide at less cost than sand. (3) Clean, leachable sand charges, permitting free aeration, and facilitating the dissolving of gold, and the washing out of gold with decreased volume of solution. (4) Clean sand residue, for sand filling. (5) Low cost of plant operation and maintenance. (6) Lower capital expenditure for plant. (7) Dissolving of gold in sand by cyanide solution begins within half an hour of ore being crushed in battery. (8) Less volume of gold-bearing solution to precipitate. The validity of the foregoing claims is evidenced by the fact that at present about 20 per cent. of the total Rand tonnage is being treated by this process, and the following is a list of companies using the Caldecott process, together with the respective ore tonnages treated per month:—(a) Simmer and Jack Proprietary Mines, Ltd., 79,700 tons; (b) Jupiter G.M. Company, Ltd., 42,400 tons; (c) Simmer Deep, Ltd., 63,000 tons; (d) Princess Estate and G.M. Company, Ltd., 22,800 tons; (e) Geduld Proprietary Mines, Ltd., 24,000 tons; (f) East Rand Proprietary Mines, Ltd., 170,000 tons; (g) New Kleinfontein G.M. Company, Ltd., 45,000 tons; (h) City and Suburban G.M. Company, Ltd., 27,500 tons; total, 474,400 tons. *Crushing in Water.*—Mr. Spicer writes as though there is nothing in favour of the Rand practice of crushing in water, and while impartial judges readily admit the desirability of crushing ores in cyanide solution where the percentage of recovery by amalgamation is trivial—as in connection with gold telluride, or silver sulphide ores—still, they are equally ready to admit the fallacy of crushing in cyanide solution where a high percentage of the gold can be recovered by amalgamation. It is certainly unsound, metallurgically, to crush Rand ore in cyanide solution and thus needlessly incur trouble from corroded copper-plates, liability of loss of gold-bearing solution, base bullion due to deposition of dissolved copper and zinc, and the more prolonged and expensive cyanide treatment necessitated by richer tailings. Further, crushing in cyanide solution renders it impossible to obtain accurate screen values, due to the presence of dissolved gold in solution. The crushing of Rand ore in cyanide solution has been tried on a large scale, and abandoned for the reason stated above, and as a great deal of expense was incurred in converting mills to make them suitable for crushing in cyanide solution, there was, of course, every inducement not to revert to crushing in water, but the troubles experienced were so great that such a change was found to be absolutely necessary. In America you have the Homestake Company treating an ore of about the same characteristics as regards amalgamation as Rand ore, and it is interesting to note that the Homestake crushes in water. Rand metallurgists are becoming rather used to outside criticism, and an article appearing in the August 9th, 1913, issue of the *South African Mining Journal*, under the heading "Rand Metallurgical Methods," would doubtless interest some of your readers. Mr. Bateman here quotes the article at length.

Colliery Manager's Pocket Book for 1914.

This, the 45th edition of the Colliery Manager's Pocket Book, Almanac and Diary for 1914, contains 450 pages of letterpress, in addition to diary, memoranda, etc.; nevertheless, it is easily accommodated to the jacket pocket. Here the colliery official has in a portable form the whole of the numerous Acts and Regulations relating to British coal mining. This is accompanied by a host of statistics and data on all subjects that come within his purview, such as the analysis and character of coal, the strength of materials, machinery, ventilation, surveying, concrete, rescue and ambulance, electricity, valuation, depreciation, explosives, etc. The "Pocket Book" is also a recognised work of reference, containing lists of institutes, trade societies, inspectors of mines, educational institutions, etc. Much of the information is not to be obtained from any other source. Published by the Colliery Guardian Company, Ltd., 30 and 31 Furnival Street, Holborn, London.

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Finance, Commerce, and Industries.

Empire Commerce.

The adoption by the British Imperial Council of Commerce of the draft constitution drawn up by its committee and the election of officers, which took place at a recent meeting, marked an important step in the direction of full commercial co-operation between the various parts of the British Empire. The formation of this Council was first mooted in 1911, and the inaugural meeting was held on July 5 of that year. The necessity for placing the proposed constitution before distant bodies has prevented more rapid progress towards its final ratification, and other causes have contributed to the delay, but the Council may now be said to be in working order. The objects of the British Imperial Council of Commerce are to provide a permanent and continuous link between the various commercial institutions of the Empire, to collect and distribute commercial intelligence, to take over the organisation of the triennial congresses of Imperial Chambers of Commerce, and to give effect to the resolutions passed by these congresses. Prior to the Congress of 1912 these triennial Congresses were organised by a committee of the London Chamber of Commerce. The new body organised the Congress of 1912, and will continue to arrange for triennial Congresses in future. For the time being the staff and officers of the London Chamber of Commerce will be utilised by the new Council, but when its work develops the provision of permanent officers to deal with the Council's business is contemplated. The officers of the Council are:—President, Lord Desborough; chairman, Mr. Stanley Machin; vice-chairman, Sir Algernon F. Firth, Bart.; treasurer, the Hon. J. G. Jenkins; and Mr. Charles E. Musgrave, secretary. Of these gentlemen, Lord Desborough and Mr. Machin represent the London Chamber of Commerce, Sir Algernon Firth the Associated Chambers of Commerce of the United Kingdom, and Mr. Jenkins, who was formerly Premier of South Australia, may be regarded as representative of the Empire Overseas. The Executive Committee includes representatives of the United Kingdom, Canada, Australia, New Zealand, South Africa, India, the West Indies, and British Chambers of Commerce in foreign countries.

* * * *

Sir J. L. Hulett & Sons.

The committee of shareholders of Sir J. L. Hulett & Sons, Ltd., has issued the following statement: "In the circular of 17th September last, which was sent out by Messrs. Ashurst Morris Crisp & Co. (the solicitors to the shareholders' committee), shareholders were advised that a member of the committee was proceeding to Natal to attend the annual meeting, which was fixed for the 29th October, but which was adjourned to the 12th November. Mr. H. Marks, the member of the committee referred to, had been in consultation with the board of directors in the interim, and the committee is advised that when the meeting was held it was decided to declare a dividend of 5 per cent. in respect of the last year's accounts, but that this dividend should not be paid till the 31st March, 1914, by which time the company should be free of debt. In his brief cable message Mr. Marks further reports that he visited all the company's factories and properties, that he found there had been mismanagement and unwise finance, but with the alterations in control which have now been agreed to the company has an excellent future. As the result of Mr. Marks' visit, the committee is further informed, the managing director (Mr. A. Hulett) has resigned and the appointment of a gentleman of wide local, commercial and financial experience has been made. Arrangements have also been made, or will be made at further meetings to be called, for the appointment of five English directors who will appoint alternates to sit on the board in Natal. The question of the increase of the capital of the company has not been dealt with and consideration of this important matter will be deferred until the new management have had time to make full investigation. Mr. Marks has now sailed from Durban on his return. He will meet the committee upon his arrival, but unless it is found necessary again to communicate with the shareholders the committee will be dissolved." Since the above circular was drafted the committee learns by cable "that meetings of the shareholders will be convened for the 31st December next and 22nd January, 1914, to give effect to the agreement come to with Mr. Marks." At these meetings the necessary quorum is 126,000 shares, and proxies are being asked for by the committee.

THE SOUTH AFRICAN SCHOOL OF MINES AND TECHNOLOGY.

Department of Mining and Surveying.

Applications are invited for the position of Assistant to the Professor of Mining and Surveying. Duties to begin 1st March, 1914. Salary £40 per month, rising by two annual increments of £5 to £50 per month. The work includes both day and evening lectures with field-work.

Applications, accompanied by a medical certificate of good health, should be sent, with copies of testimonials (which will not be returned), stating age, professional training and experience, to reach the undersigned, P.O. Box 1176, Johannesburg, not later than January 24th, 1914.

GEO. S. CORSTORPHINE,
Principal.

* * * *

African Mahogany.

Since our last remarks under this heading (says the "Timber and Sawmill Engineer"), the larger quantities then mentioned as being on the water have arrived, and much of it has been disposed of either privately or at auction. The net result is that buyers have so quickly accustomed themselves to the increased supply that there is nothing for sale in first hands, except what will, in the ordinary course of events, be prepared for the next auction sales in London and Liverpool. No better proof could be furnished of the strength of the demand than the market's ability to absorb so large a number of logs in so short a time. However, this test is by no means exhaustive, because, apart from any pressing demands from consumers, which have still to be satisfied, there are the great gaps to be filled in the yards of merchants who profess to keep anything like an adequate stock of dry mahogany for their customers' regular requirements. Apart from this, which is for domestic use, there is the export trade. Here there is no slackening in the demand, and the quantity which at present is finding its way to the United States of America is truly prodigious, nor is there any easing in orders and inquiries from the Continent—in fact, this quarter is in a very healthy state indeed now that buyers have become accustomed to a higher level of prices. Shipbuilding centres, more especially the Clyde, make persistent and regular demand for good long board and panel logs. All this naturally keeps prices firm, and the probability of their remaining so for some time is more than likely. The only possible alteration in prices may be caused by the supply still further increasing, but against this is to be put the limited space available in the steamers bringing the logs from the West Coast of Africa, and, also, the Axim season will be the first to close.

WANTED.

POSITION IN REDUCTION WORKS on Small Property in Outside District by Hard Working Man, with good credentials. Can take entire charge and design and erect small plant. Amalgamating, Cyaniding, Smelting, etc. Experienced in erecting and running Suction Gas Plants. Moderate salary required. Reply, "CAPABLE," c/o S.A. *Mining Journal*, Box 563, Johannesburg.

Automobile Notes.

International Trophy Race.

An excellent list of entries has been received for the International Tourist Trophy Race in the Isle of Man. No fewer than twenty-three cars have been entered at single fees, and as the list will be kept open until March 31 at double fees, and as several Continental firms, which have not yet entered, have expressed much interest in the contest, it is very probable that further entries will be forthcoming before the closing date. Among the cars already entered are three Minervas, three Sunbeams, three Humbers, two Straker-Squires, two Stars, three Vauxhalls, three Adlers, three Pipes, and one Martini. The total distance to be covered is about 600 miles, and two days will be devoted to the event. In addition to the Tourist Trophy itself, the winner will receive £1,000, presented by the *Daily Telegraph*, who will also give a second prize of £250, a team prize of £300, and a fuel prize of £100 for the best performance on a fuel other than exclusively petrol.

Under the New By-laws.

Under the new by-laws relating to defective vehicles recently made by the London County Council, it is provided that in any case where a vehicle breaks down and causes obstruction to traffic in any street or public place, and if the breakdown is due to defective condition or overloading, the owner and driver, if they fail to satisfy the Court that reasonable precautions had been taken to prevent such breakdown, are each held to be guilty of an offence, and liable to a penalty. The Commercial Motor Users' Association is endeavouring to secure a modification of this by-law with a view to exonerating the owner and driver of the vehicle if it can be shown that the accident was due to projecting or defective tramway rail, conduit or inspection-hole cover.

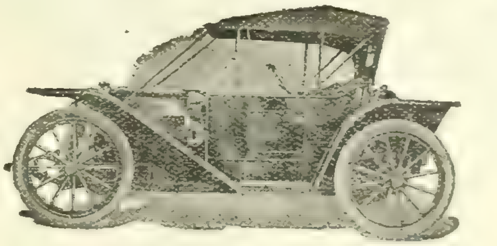
Dr. A. M. Low, the inventor of several useful instruments, has now placed upon the market, through the British Low Accessories Co., Ltd., a device called the Low Averometer, which indicates, at any moment, the average speed at which, up to that point, the car is travelling. By an ingenious arrangement, advantage is taken of the movement of a clock, a speedometer and an odometer, to produce the movements of a pointer over a dial where this information is given. The device can be made to indicate average speed right up to the end of a trip, including all the time spent in crawling behind wagons, stopping to change a wheel or to replenish the inner man. The instrument always points to average speed, and indicates to the driver how fast he must needs go to maintain a definite pace. If necessary, the Averometer can be thrown out of action when stopping, so that running time alone is counted.

About twelve months ago prophets were quite confidently predicting that a great increase in water-cooled motor-cycle engines would be experienced, especially for passenger-carrying work. As a matter of fact the last Olympia Show revealed that very little headway had been made. The old adherents of this system still stuck to their guns, notably the Williamson, Green-Precision, and the Scott, while an interesting newcomer is the 3½ h.p. water-cooled Humber. This state of affairs is rather surprising, for there is no doubt that a great deal of hard slogging and low gear work can be done on quite small engines under heavy load when water-cooling is employed. But the reason for the prevalence of air-cooling is probably due to other causes than fear of leakage in the radiators. Cylinder casting is now such a fine art that overheating is not to be feared, the only danger being valve breakage occasionally, but this is a minor trouble. And lubrication systems, despite abuse from the ultra-critical, are nowadays good.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9



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4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
'Phone 1434.

15·9 H.P. Colonial Vulcan.
"Imperial," Three-seater with Two-seat Dickey.

Important Notice.

ONE CAR, as per illustration, for immediate delivery
Price £450 complete.
ONE 5-SEATER, arriving incoming mail.
Price £475 complete.
These cars are beautifully finished, and deserve the closest inspection.

Demonstrations and all particulars from the Sole Agents:—
T. B. ADAIR & CO.,
(Vauxhall Agency)
Phone 2570. | 67, Kotze Street, Hillbrow. | Box 1940

City and Suburban.

The following are the details of operations for December at the City and Suburban. Tons milled, 25,150; gold recovered, 11,053 fine ounces; profit, £19,110.

New Kleinfontein.

The following are the particulars relative to the operations on the New Kleinfontein Company's property for December: Stamps, 200; days run, 29.595; tube mills, 4; tons milled, 49,700; gold recovered, 15,087.956 fine ozs.; net value, £63,381; profit, £21,182; working costs (excluding development), 15s. 9.534d.; development to working costs, 1s. 2.245d.; total working costs, 16s. 11.779d.; capital expenditure, £372.

Sheba G.M. Co.

The following are the operations of this company for the month of December:—Crushed 5,330 tons, yielding 3,352 ozs.; estimated profit, £4,216.

Notice to Owners and Users of Machinery.

OFFICIAL STATISTICAL RETURNS.

In terms of Regulation 138 of the Mines, Works and Machinery Regulations, framed under Act No. 12 of 1911, owners and users of machinery are hereby called upon to furnish a return of all machinery erected or in use as at the 31st of December, 1913.

The forms prescribed for this purpose (K or K1) are obtainable gratis on application to the office of the Government Mining Engineer, P.O. Box 1132, Johannesburg, or Room 44, New Law Courts Buildings.

This return must be rendered on or before the 26th of January, 1914.

The definition of the word "machinery" is as follows:

> "Machinery" shall mean and include stationary and portable boilers, steam apparatus, steam and other engines, including locomotives and all appliances or combinations of appliances which can be used for developing, receiving, transmitting, or converting either mechanical or natural power, but shall not include any locomotives owned or used by the Department of Railways and Harbours.

Failure to comply with this notice renders the owner or user of machinery liable to prosecution.

R. N. KOTZE.
Government Mining Engineer.

Taylor-Coryell Madagascar Petroleum Syndicate, Ltd.

The secretary of the above syndicate has communicated the following information: "The Taylor Coryell Madagascar Petroleum Syndicate, Ltd., issued capital £3,500 in £10 shares, has title to 132 square miles of the Madagascar petroleum belt. Its ground was the first ground selected in that island as petroliferous, and, until lately, was the only ground on which any important boring has been done, and has been reported on in very high terms by Dr. McLelland Henderson, H. T. Burls and Monsieur E. D. Levat and other engineers of repute. The syndicate granted an option to bore with rights to float in 1910. The company who had these rights laid down two complete drilling plants at a cost of £8,000. Each plant is capable of drilling 2,500 feet—one is quite unused. They put down only two boreholes, which reached a depth of 800 and 1,300 feet respectively, and both of which encountered oil. There were disagreements between the boring company and the syndicate, which ended in the syndicate resuming possession of its property, and the option being cancelled. The syndicate bought the above-mentioned drilling plants—a bargain—in January last, after arranging for funds by disposing of a parcel of its shares at £24 each. Drilling is being carried on now on the adjoining property (Sakalava) with a considerable measure of success. Negotiations are now in a forward state for the provision of large fresh capital to enable work to be started on an extensive scale on the Taylor Coryell ground."

THE CASSEL COAL COMPANY, LIMITED.

(INCORPORATED IN THE TRANSVAAL.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Sixteenth Ordinary General Meeting of Shareholders in the above Company will be held on TUESDAY, THE 31ST DAY OF MARCH, 1914, at 11.15 a.m., in the Board Room, Lace Building, Johannesburg, for the following purposes:—

1. To receive and consider the Balance Sheet, Profit and Loss Accounts, and Directors' and Auditors' Reports for the year ended 31st December, 1913.
2. To elect two Directors in place of Messrs. J. Dale Lace and J. H. Ryan, who retire in rotation, but, being eligible, offer themselves for re-election.
3. To appoint Auditors for the ensuing year and to fix the remuneration of the Auditors for their past services.
4. General Business.

The Transfer Books of the Company will be closed from the 23rd to the 31st March, 1914, both days inclusive.

By Order of the Board,

T. L. DAY,

Acting Secretary.

Lace Building, 58 Fox Street,
Johannesburg,
6th January, 1914.

"ROBIN HOOD" BRAND
Wire Ropes
for
all purposes

Manilla
Rope
for
Tackle and
Transmission.

STOCKS OF ALL SIZES CARRIED.

TEL. ADDRESS: "HARDIHOOD."

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Phone 2248.——P.O. Box 899.

Stores: Main Street.

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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The 1913 Gold Output.

Elsewhere in this issue will be found particulars of the gold output of the Transvaal for the month of December. The year's total, it may be remarked, is 8,795,824 ozs., of a value of £37,468,024, as against 9,124,299 ozs., valued at £38,757,560 in 1912. The decrease is thus 328,475 ozs., or £1,289,536, and is in the main accounted for by the July strike and the subsequent shortage of native labour.

* * * *

Vogel Estates.

The report and accounts of the Vogelstruis Estates and Gold Mines reveals a total debit of £33,178. There is a satisfactory increase of £25,235 in the gold recovered from the mill, cyanide and by-products, the amount realised being £173,732, as against £148,496. At June 30, 1912, the payable ore reserves were calculated at 120,120 tons. The satisfactory increase, therefore, of 87,437 tons of payable ore is to be noted as the result of the development work conducted during the year.

* * * *

A National Minimum Wage.

The egregious Mr. Haggar, M.L.A., rushes in where angels fear to tread, and has published in the *Government Gazette* a Bill to provide for the establishment of a national minimum wage. The Bill is as follows:—Whereas it is deemed desirable in the interests of industrial peace and economic security, to, as far as may be, remove the causes of industrial unrest: Be it enacted by the King's Most Excellent Majesty, the Senate, and the House of Assembly of the Union of South Africa, as follows:—(1) There shall be established throughout the Union of South Africa for each separate industry, a minimum wage. (2) The minimum wage, and minimum rate of wage for each industry, and for each separate grade of each industry, shall be such as shall be determined by a "Wages Board" composed of an equal number of employers and employees belonging to the industry for which the wage is to be determined; such Boards shall be constituted in such manner and shall have such powers as may be fixed by regulations. (3) The Governor-General may make regulations, not inconsistent with this Act, for the purpose of giving effect to the provisions of section two of this Act. (4) This Act may for all purposes be cited as the Minimum Wage Act, 1914.

* * * *

National Diamonds.

The last meeting of the National Diamonds Syndicate had the distinction of being one of the most exciting company gatherings amongst many of a similar kind that have been held at various times in Johannesburg. It was not at all astonishing that it was so, if only a part of the statements made by Messrs. Light and Loveday has a substantial foundation. They were not replied to as one would have expected charges of that kind to be met by directors who have a genuine concern for the dignity and importance of their position. What seemed to be personal attacks were answered vigorously, but the more serious allegations with respect to the conduct of the syndicate's finance were not dealt with as circumstances would have justified, in spite of the somewhat informal nature of the interrogations. The plenipotentiary powers asked for by the board were granted by the shareholders by a large majority, a great number of proxies having been obtained. Much credit is due to Mr. Wm. Bleloch, the new chairman of the syndicate, for the way in which he permitted discussion, and it is probably due to him, and to the reputation he has acquired for sportsmanlike conduct in these matters, that the voting went as it did. We have consistently supported the view that the mine was deserving of a fair trial, and are still of this opinion. We may say quite frankly, however, that a want of candour towards shareholders is invariably to be deprecated, and, in the case of this particular concern, is an attitude which, if adopted deliberately, would inevitably lead to trouble. We have sufficient confidence in

Mr. Bleloch to feel sure that the very wide facilities obtained at the last meeting will not be abused. At the same time we may add that the path of the board will be much easier in the immediate future if some concession is made to those shareholders who are in a minority, and a plain statement is made with regard to points which are not as clear as they might be.

* * * *

Mine Natives and the Strike.

A feature of the strike has been the excellent behaviour of the mine natives. This is, doubtless, largely due to the issue of a circular letter by General Botha to all inspectors of native labour, desiring then to convey its contents to native labourers employed on mines and works, and instructing them to call together and read out the instructions to all native labourers present in each compound. The communication is as follows:—

> I have come to you with a message from General Botha, the Prime Minister and the Minister of Native Affairs. I am directed to tell you that a strike among Europeans has occurred on the railways owing to a dispute between the Government and some of its servants. It is possible that a similar strike among the European workers may take place on the mines. The dispute has nothing whatever to do with the natives. Your duty is to obey the instructions of your compound manager. When you are required to work you shall do so. Any of you for whom work cannot be found must remain peaceably in your compound. The mining companies have given an assurance to Government that those of you who are registered to and work for them, and for whom work cannot be found, but are ready for work, will be paid as if you had worked. General Botha directs me to tell you that all arrangements have been made, and that he has called many armed men to Johannesburg who are here and ready to deal with any persons who commit acts of violence. General Botha remembers the law-abiding manner in which the natives on the mines and elsewhere behaved generally during the last strike, and he directs me to tell you that so long as you obey the words of the Government and of your compound manager you will be protected, but that the hand of the Government will be heavy on any who may disobey these words.

* * * *

Swazieland Corporation.

During the year ended September 30, the directors of the Swazieland Corporation have continued to carry out the policy of concentrating work on the Ivanhoe mine and tin areas. In view, however, of the restricted financial resources of the corporation, in August last they were obliged to give instructions to cease work on the tin areas and confine operations entirely to the Ivanhoe mine. The development work which has been carried out on this mine continues to give promise that it will turn out a payable proposition, and there is a probability that some at least of the other outcrop mines, constituting the Avalanche group of mines, will also prove payable propositions on being developed at depth. The consulting engineers having advised that about £30,000 will be required to effectively develop the Ivanhoe mine, and the cash resources of the corporation now being practically exhausted, the directors have under consideration the closing down of all mining operations until a favourable opportunity arises of securing the necessary capital to further develop the valuable assets possessed by the corporation, particularly the Ivanhoe mine, the tin bearing properties and the Mhlosheni Alluvial. Mr. Heath, the late resident engineer, estimated that the latter property would produce a net profit of £22,800, which figure has been confirmed by Mr. Ford, his successor.

* * * *

H. E. Proprietary, Limited.

The H. E. Proprietary reports that the expenditure during the year ending June 30, in respect of the upkeep of the properties on the Murchison Range has been restricted to the payment of claim licences and the cost of caretaker. The income and expenditure account shows that the general revenue of the company during the year was £2,068 and the expenditure on administration in London and South Africa £1,367, showing, therefore, a surplus of revenue of £701. There has been written off under various headings a sum of £1,192. The position of the Murchison Free State Gold Mining Co., in which this company holds 11-15 of the capital, remains unchanged. The advances to that company have been increased during the year by £635, required to maintain the mine and the property. In accordance with the policy approved by shareholders at the last general meeting, no prospecting or mining work was undertaken during the year on the Murchison range, nor is it intended under present conditions to resume operations. As shareholders are aware, the properties and interests on the Murchison range figure in the balance sheet at original cost. It will be necessary shortly to revise the accounts in this respect. The development during the year of the property of the New Lisbon-Berlyn Co., in which this company is largely interested, has been of a very satisfactory character. The experiments which have been conducted upon the pyritic ores, of which large quantities exist in the mine, and which have hitherto resisted commercial recovery, have resulted successfully, and the board is advised that it is now possible to treat these ores profitably. At the same time the mine has been exhaustively re-sampled, and it is estimated that the pyritic ore already fully developed represents an appreciable profit value. Steps are being taken by this company, in conjunction with the New Districts Developments Co., Ltd., with which it is jointly interested, to place the New Lisbon-Berlyn Co. on a sound financial footing, and to provide funds for the erection of the necessary plant.

* * * *

An Employers' Defence Fund.

There is no indication that the United Kingdom Employers' Defence Union, of which much has been heard during the past few months, will meet with any great support from the coal trade. Briefly the objects of the organisation are to enforce agreements and to afford mutual protection to employers against the combined attacks of labour. For this purpose it is proposed to form a guarantee fund of £50,000,000, annual calls being limited to 7½ per cent. on the amount guaranteed by any member. The best that can be said for such a project is that it is a logical offspring of the Trade Disputes Act—which has most unfairly adjusted the balance against employers—and the supineness of the Legislature; it is proposed that the union should be registered as a trade union, and so enjoy the privileges conferred by the Act, which, in the case of a large association of employers, may well be tangible and important.

* * * *

The Nigel's Dividends: A Correction.

In our list of "The Year's Dividends," published in our issue of the 3rd inst., page 434, we credited the Nigel Company with one dividend only for last year, whereas two were declared, one in June, 1913, of 5 per cent., and one in December, 1913, of 10 per cent. We hasten to make this correction.

* * * *

Strikes and Lock-outs.

The outstanding feature of 1912 was the national dispute in the coal mining industry, in which about 1,000,000 work people were involved, or more than twice as many as the total for all other disputes. The stoppage of the work in and about coal mines for an aggregate of over 30 million working days represented approximately 11 per cent. of a year's working time in the coal mining industry; but owing to increased activity both before and after the dispute and the great demand for coal in a year of expanding trade, the total output in 1912 was only about 4 per cent. less than in 1911. Although the second half was comparatively free from industrial disturbance, the total number of workpeople involved (1,464,000) and the aggregate duration in working days (40,915,000) of all disputes in 1912 were much higher than in 1893, a year which, owing to a great coal mining dispute affecting the Federated districts of England, has hitherto held the record in both these respects. Altogether in 1911 and in 1912 the aggregate duration of labour disputes exceeded the total time lost in this way during the previous 12 years. For the first eight completed months of 1913 a larger number of disputes occurred than during the corresponding period of 1912, or during the whole of any of the last ten years. In the 960 disputes in the eight months nearly half-a-million work people were involved, and the total aggregate duration was over 7,000,000 working days. In the coal mining industry sectional disputes were fewer in 1912 than in the three previous years, although more numerous than in any of the other years in the ten-year period. As regard duration, in the coal mining industry the average loss of time was about 30 days per head of those employed. The estimated aggregate duration of the general coal strike was 30,800,000 working days, and the total aggregate duration of all disputes in the coal mining industry in progress during the year was 31,561,043 working days. Prior to 1912, the years with the highest aggregate durations in the coal mining industry were 1893 1898, when 21,137,000 and 11,650,000 working days respectively were lost by prolonged disputes in the Federated districts and in South Wales. Taking coal mining only, we have the following disputes beginning in 1912:—

Method of Settlement.	Number of Disputes.	Number of Workpeople directly involved.
By direct arrangement or negotiation be- the parties or their representatives...	118	61,449
By arbitration	1	130
By conciliation or mediation	2	3,105
By legislation	1	850,000
By return to work on employers' terms without negotiation	23	6,651
By replacement of workpeople	1	60
By closing of works	—	—
Otherwise (including indefinite and unsettled)	1	105
	147	921,500

* * * *

Rules for the Prevention of Accidents.

General rules for the prevention of accidents at the Copper Queen Company's mines, in Arizona, as published in the *Mining and Scientific Press*, include the following for underground work:—(1) As all mining work is hazardous, extra care should be taken not only for your own safety, but for the safety of men working with you. (2) Watch for danger signals; they are often unnoticed if there is not sufficient light. (3) Every manhole and place of refuge shall be kept constantly clear, and no refuse shall be placed therein, and no person shall in any way prevent access thereto. (4) The general condition of the timbering in the mine shall be safe. The men shall take all the necessary precautions to ensure the safety of the timber in the working places. (5) In all stopes where square sets are used, it shall be the duty of men working in stopes to see that the floors are property centred on the caps, particularly after blasting, and spiked wherever deemed necessary. (6) When working in heavy or untimbered ground, care should be taken that there is plenty of room for a quick exit. All obstructions, such as cars, wheelbarrows, etc., should be moved out of the way. (7) Existing winzes opening directly from the floor of the drift or stope must be kept covered by a substantial hatch, or planking, except when in use, at which time the passage to persons other than those working at the winze shall be barred off by a substantial rail across the roads of access to the openings. (8) The miners shall be responsible for the safety of the roof and walls of their working places. (9) In mining, care must be taken in approaching workings thought to be filled with water, and the boreholes must be kept at least 20 ft. in advance of the drive. (10) Planking over sumps and ditches must be kept secure. (11) No candle or lamp shall be left burning in a mine when the person using the candle or lamp departs from his work for the day. Sconces must positively be used, except when candlesticks or carbide lamps are employed. Lights must be placed so that timber cannot catch fire. (12) Employees shall, as soon as discovered, inform the foreman or shift boss of the unsafe condition of any working place. (13) Be sure that chutes are protected so that men cannot fall into them. (14) Men are strictly forbidden to carry tools upon their shoulders in any drifts where electric wires are installed. It is very dangerous and may result in death. (15) Two openings to surface are provided by law, except in the case of mines that are being opened. (16) Men should learn the different openings from their place of work, and their attention is called to signs at the intersection of drifts which direct them to shafts or outlets.

TOPICS OF THE WEEK.

THE END OF THE CRISIS.

As we go to press there are signs that the so-called general or sympathetic strike is fizzling out. This is not the moment to comment on the policy or methods of those who are responsible for leading organized labour on the Rand to take up a wholly impossible position. The railwaymen have not taken long to realise their folly, and as far as can be gathered, are now hastening back to work. Fortunately for themselves only a small proportion of the men on the mines left work, and, of those who did, the majority are now following the example of the railway strikers and signing on again. Members of the other unions affiliated to the Federation of Trades who came out for sympathetic reasons are comparatively few in number, and they stand in danger of losing their work altogether through having their places filled in their absence. At any rate, their return to work is bound to be attended by new conditions less favourable than the old. Thus, to sum up the position, it would seem that the Government by its vigour, boldness and resolution has effectually broken up the power of the Federation and put a period to its potentiality for evil in this country. Elsewhere in this issue tributes are paid to the foresight and organizing ability of the Government, and of General Smuts in particular, which went so far to crush the disaffection in its earliest stages. The moral, it is to be hoped, will not be lost upon overseas investors and others interested in South Africa. When almost every other country in the world is finding increasing difficulty in coping with the exploitation of the worker by the socialist and the revolutionary South Africa has shown that it will not tolerate this form of warfare on the public and the State. The problems of Government in this country are in truth numerous and peculiar enough to justify the adoption of heroic measures to meet desperate situations. After all, the first duty of a Government is to govern. Weakness is the one unpardonable sin. The Union Government has won the approval of all sensible men in its action of the past week. One result of that action, and from the industrial point of view not the least, should be a marked accession of confidence in the country, reflecting itself in an increased inflow of capital, pulsating through all the veins and arteries of finance and commerce, and hastening the era of peace and prosperity now so long overdue.

THE MINES AND THE STRIKE.

The Witwatersrand and other disturbed areas of the country are under Martial Law and during continuance of the military régime we shall refrain from discussing controversial aspects of the present situation. We shall, however, endeavour to chronicle a few facts in regard to the present position as it affects the industry with which this paper is mainly concerned—the gold mining industry of the Main Reef series. Before proceeding, however, to record events directly concerned with the mines, we feel that a word of the highest commendation for the able manner in which a difficult situation has been handled by the Government is called for. The precautions taken by the authorities to maintain law and order have evoked the highest praise from all right-minded citizens, and the mobilisation of the Defence Force reflects the greatest credit on all connected with that body and particularly on the master mind of the organisation, the Union's Minister for Defence, General Smuts. At the moment of writing it would appear that whilst the mines are working at considerably below their full capacity there has been nothing like the disorganisation that was feared. At a time like the present it is difficult to glean accurate information from all the points of such an extensive area as the Witwatersrand, and moreover the position is continually changing—changing, we hope and believe, for the better. So far as we can gather only a very few mines ceased working, and the position at the majority of properties is that although there has been disaffection to the extent of a number of men leaving their work, ore is being hauled without hindrance through the main shafts and the mills and cyanide equipments are at work. At some properties the response to the call of the Federation to cease work has been met more readily than at others—the Modderfontein and Van Ryn Mines have come out on strike, and in this area which, it may be remembered, was the first to "down tools" in July last the strike movement appears to have been more complete than elsewhere. The position in regard to the town mines is that all are working. At the Wolhuter practically all the men came out, but large numbers have since returned. At the Consolidated Main Reef mines a large number struck work, but we believe the position there is now very well in hand. The great majority of the men on the Wit. Deep did not favour striking, and being guaranteed adequate military and police protection remained loyal to the company. As to the Rand Mines group, with two exceptions the mines of the group are working and the batteries are all running. The staff and many of the men are extremely keen and are working splendidly. A number of engine drivers are not at present doing full duty, but it is expected confidently that all will have returned to work by this time. Most of the men from the shops are out. This is not in any way interfering with the running of the mines. There has been no trouble with the natives. Miners and other men on strike are most dissatisfied for having been called out by the Federation of Trades. They have grave doubts as to the reliability of the ballot figures published by headquarters. It is definitely known that in many cases the men voted by large majorities against a strike. The feeling among many of the union men themselves is that their leaders have not played fair with them. At the Crown Mines, the biggest of the group, work is proceeding splendidly. Rock hoisting is in full swing at the most important shafts. Nearly all the white miners on the Western section are at work. Further west, at the Bantjes and Durban Deep things are satisfactory. In fact the outlook is hopeful all along the line right up to the New Modderfontein and Modder B on the extreme east. Generally stated, the position with the Gold Fields group on Thursday morning was that a very large proportion of the surface men, chiefly mechanics, are out, while a very large proportion of the underground men are working. At the Simmer and Jack yesterday the underground men took a ballot and decided by 130 votes to 10 against striking. The position on the mines of the Goerz group on Thursday was as follows:—Geduld: Everyone is on strike except the reduction men, engine drivers and firemen. The natives are all working underground with the staff, and the mill is running. Modder Deep: Practically all the men are on strike except the engine drivers and firemen. The natives are working mostly on the surface. Mill running. May Consolidated: Only three surface men have struck, but all the underground men except three. The natives are all working underground in charge of the staff and these three men, and the mill is running. Princess: In the two sections all the underground men have struck except eight, and all the surface men have struck except the reduction men, engine drivers and firemen. The report from the Randfontein Estates on Thursday was that while the vast majority of the miners are prepared to go on shift, the members of the Amalgamated Society of Engineers will not make the necessary arrangements to lower them, and in consequence work on the group is practically at a standstill. This is, however, not the case at the Stubbs shaft, where the men went down the ladders to work. Ballotting took place on Thursday morning at the Cason as follows: 143 in favour of working and 3 again. All went on shift. At the Comet the men asked the Police to assist in the counting of the ballot papers, which resulted in 93 in favour of working and 13 against. All promptly went on shift. At the Angelo section only ten or fifteen are not at work. At Driefontein all are working except four. Sir George Farrar and Mr. Anderson went round the E.R.P.M. properties early on Thursday morning making a final appeal to the men's good sense, with the result as stated. The Germiston shop assistants held a meeting yesterday afternoon. They are all back to work to-day. The New Primrose surface men ceased work, but the underground men are working. The New Kleinfontein men did not go on shift on Thursday morning. At the Modder B. all the men, with the exception of those of the reduction works, are out. The Van Ryn men are also out. These particulars, it should be made clear, were gleaned on Thursday morning, and by the time this appears in print it is expected most of the men who went out will have re-offered their services.

PROGRESS IN CYANIDING.*

The Treatment of Copper-Lead-Zinc Ores.

[By H. A. MEGRAW.]

In summing up the discussion of ores which may be amenable to cyanidation, the first thing which attracts the attention of those conversant with the history of cyaniding since its inception, is the enormous width of the field at present compared to what was originally expected. At first only gold was considered susceptible to cyanidation, and at that only free gold in clean, silicious ores. Then more refractory gold ores were undertaken and successfully treated, the process passing gradually to silver ores. The halogen compounds of silver, such as chloride, bromide, etc., were always easy to dissolve in cyanide solution, and their treatment has never offered any difficulties. The sulphide, however, did offer an obstruction to successful treatment for a long time, and it may be said that it is only within the past eight or ten years that it has been successfully done. As a matter of fact most of the low-grade silver ore in Mexico, which is being treated by the cyanide process, is in the form of sulphide, and certainly the production from that source is extremely great at this time. Even the concentrated silver sulphide, which almost always contains arsenic and antimony compounds, is sometimes treated by itself with cyanide solution, maximum extraction being often obtained at less cost than if the material were shipped to smelters and treated in the blast furnace. With the remarkable progress of the cyanide process in sight, it is difficult to say where the end will be and certainly we may not legitimately place any limit upon the class of ores which will probably be successfully handled by it within the not very distant future. Probably the most promising line of improvement is the use of aluminium dust in precipitation, as adopted at the Nipissing mill, Cobalt, Ontario. What naturally occurs to the mind is that even the baser metals contained in many ores may be commercially extracted if it can be assured that, after removing the metal from the cyanide combination, the cyanide will be returned to the solution for further use. This field seems extremely promising, and I expect to see much development in it within a short time. Another development, which may be more or less combined with aluminium precipitation, is the ammonia-cyanide treatment of copper, lead and zinc-bearing ores, of which large quantities exist, now altogether useless to its owners. There is no reason why successful treatment of these ores should not be accomplished, and I fully expect to see it done at some time.

Mine Accidents. The accident rate on mines in the Union of South Africa during November was the smallest that has been recorded for some very considerable time, if indeed it is not the smallest on record. This, considering the large number of workers employed is highly satisfactory. The total number of separate accidents recorded for all mines in the Union during the month was 241. There were killed 13 white men and 72 coloured employees. This is a larger number than is recorded in respect of the preceding month, but the list of injured, 17 whites and 173 coloured, making a total of 190, is much less. It seems that the strenuous efforts of the mining groups to reduce loss of life and limb are already bearing fruit.

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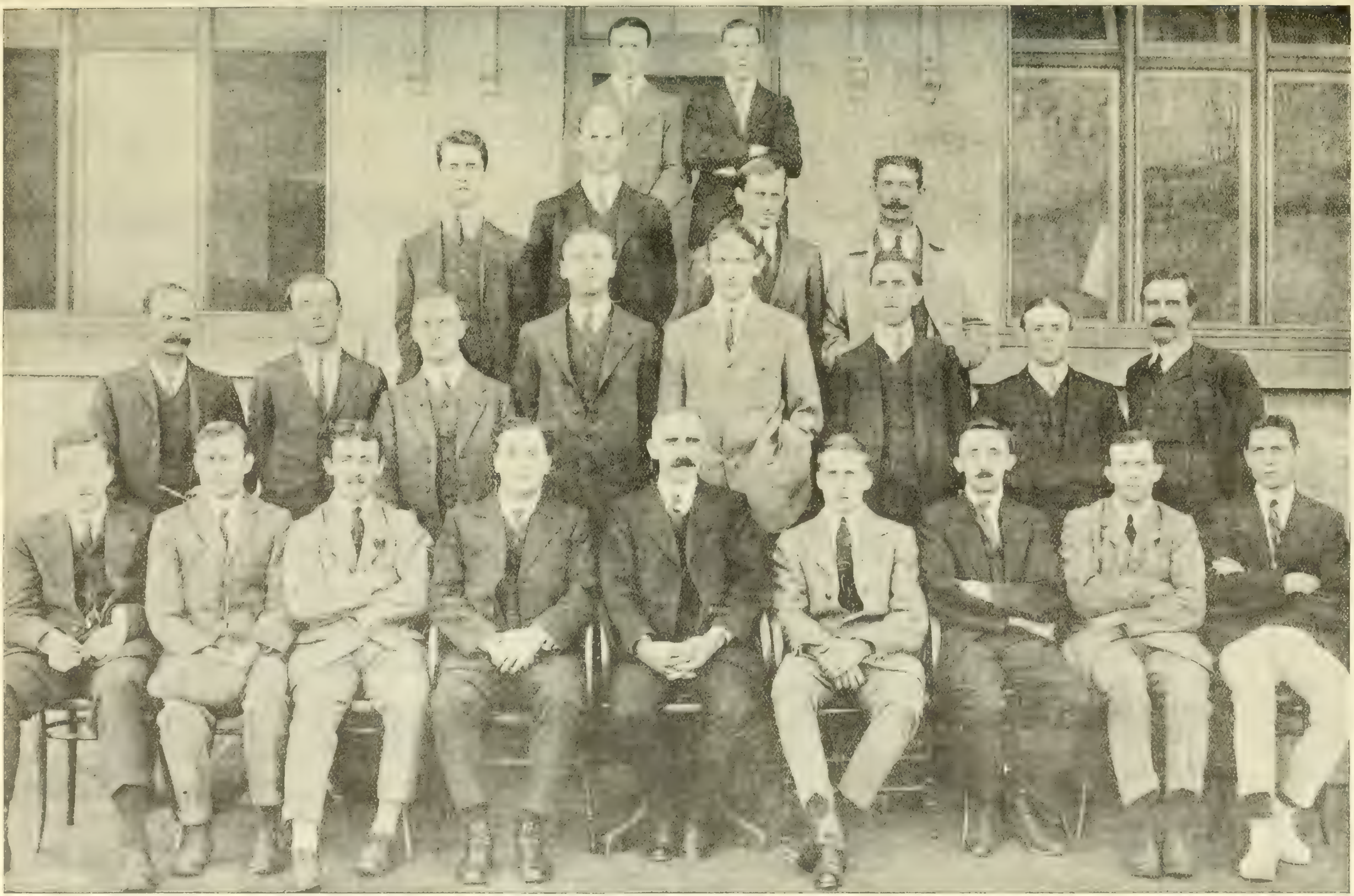
*Abstracted from the *Engineering and Mining Journal.*

VICTORIA FALLS AND TRANSVAAL POWER STATION STAFF, SIMMER PAN.



Top row: M. E. Sachs; J. Morton (Junior Switchboard Attendant). 2nd row: W. Galpin (Junior Switchboard Attendant), E. Smart (Station Electrician), C. J. Monk (Assistant Test Engineer), A. J. Taylor (Foreman Electrician).

3rd row: J. McKnight (Station Fitter), L. W. Strachan (Assistant Test Engineer), H. W. Hawtin (Senior Switchboard Attendant), A. Hawtin (Assistant Switchboard Attendant), J. Murray (Junior Switchboard Attendant), L. le Roux (Assistant Switchboard Attendant), L. Burrell (Junior Switchboard Attendant), H. W. Gray (Station Clerk).

4th row: —. Randall (Control Engineer), A. C. Hall (Assistant Test Engineer), T. F. Whinster (Testing Engineer), J. G. Bell (System Superintendent), G. Hall (Engineer in Charge), W. G. Edwards (Shaft Engineer), E. H. Smith (Shaft Engineer), H. Brokensha (Shaft Engineer), —. Hirchfeld (Senior Switchboard Attendant).

THE YEAR WITH THE COAL, DIAMOND, AND BASE METAL MINES.

A Review of 1913 with the Collieries, Diamond, Tin and Copper Propositions of the Transvaal.

In two previous issues we have reviewed briefly the salient features of the gold mining industry of the Transvaal, firstly, as regards the Rand, and secondly, the gold mines of the outlying districts during the year recently brought to a conclusion. We here propose to review shortly the history of the past twelve months as it has affected the other mineral industries of the Province. The collieries, diamond and base metal mines of the Transvaal, unlike the Rand, have, in common with the gold mines of the outside districts, been practically unaffected by industrial disturbances, and the work of these ventures has gone on without hindrance on this score. There has, of course, been some indirect influence, more particularly to the collieries, but only in a minor degree. In so far as the coal mines are concerned, there has, however, been disorganization on account of shortage of railway trucks, and as was reported at the meetings of certain collieries, more particularly those in the Middelburg-Witbank area, this shortage has at times seriously curtailed the output and has hampered the development of an export trade. Notwithstanding this, the coal mines have, on the whole, enjoyed a prosperous year, as witness the payment of just under a quarter of a million sterling. The largest contributor to this total is the Transvaal Coal Trust with a total of £95,508, the Witbank Collieries coming next with £52,500. Both these important concerns record declines in comparison with 1912, and in the case of Witbank it may be pointed out that in consequence of the new mining regulations arising out of the July strike, which mean shorter shifts at the working faces underground, the company has had to go to considerable expenditure in connection with new equipment with a view to the maintenance of output on the basis of a shorter shift. The Transvaal and Delagoa Bay Investment Company has maintained its dividend at £32,375, and the Anglo-French, which in 1912 distributed £12,000 last year paid out £19,500. The Breyten Collieries, the latest addition to the list of the Transvaal's productive and dividend earning coal pits paid out £9,000. The success that has attended the efforts of the Breyten Company has brought about a considerable amount of prospecting work in the Breyten-Ermelo coal fields and were the industrial position more satisfactory it is certain that efforts would be made to bring fresh areas into the competitive arena of the Transvaal coal trade. As to the output of coal in the Transvaal, returns for this year have been as follows:—

	Tons.	Value at Pit's Mouth. £	Value per Ton. s.	d.
1913—January	417,717	90,149	4	3·80
February	380,802	82,539	4	4·02
March	413,555	88,857	4	3·57
April	446,740	95,854	4	3·50
May	457,063	98,813	4	3·89
June	448,781	98,887	4	4·88
July . ..	461,212	102,749	4	5·47
August .	420,484	92,792	4	4·96
September ...	429,142	94,699	4	1·96
October	443,360	98,295	4	5·21
November ...	437,249	96,388	4	4·91

DIAMONDS.

In regard to diamonds, the operations of the Premier Company, near Pretoria, and the work of alluvial diggers in the South-Western Transvaal are the only matters that call for mention. As to the former proposition, operations were continued without hindrance, save for a minor revolt amongst the natives employed there. The company has paid out in dividends £400,000, as compared with £360,000 in 1912. Prospecting and preliminary development operations have been carried out throughout the year in the vicinity of the Premier Mine, but apparently no very satisfactory results have thus far been obtained. In the South-Western Transvaal in Bloemhof, Schweizer-Reneke and Christiana Districts, diamond diggers have been busy throughout the year, but during the latter part of 1913 returns fell away considerably largely no doubt on account of the rush to the disappointing Killarney fields. Two years ago when discoveries on Mooifontein attracted attention to the alluvial diamond fields of the Bloemhof district it was little thought that the gem-bearing area would be proved to be of such large dimensions as are at present established. After the exhaustion of the richest runs on Mooifontein, London and other farms and the ground immediately adjoining, the township of Bloemhof attracted a large number of diggers. Later the Eastleigh diggings came into favour. As a consequence prospecting and digging operations are now proceeding all over the South-Western Transvaal, and for the first six months of the year the various diggings produced diamonds worth £278,410. Latterly Schweizer-Reneke has attracted considerable attention, but of recent months returns have been falling off. The following table gives returns for the twelve months of the year:—

	Carats.	Value.		
January	7,105	£40,381	1	0
February .	7,695⅜	43,063	6	0
March	8,917¾	49,805	19	6
April	7,416	42,951	9	9
May	9,355⅜	58,472	3	0
June . .	7,252⅛	43,735	18	0
July	7,735	39,843	11	0
August	7,467⅝	33,344	12	6
September	6,828⅝	25,957	5	0
October	5,625	21,655	1	6
November	3,514	12,444	1	0
Total	79,010⅞	£411,654	8	3

A summary of the returns for last month is as follows:

	Carats.	Value.		
Bloemhof	932⅝	£2,740	6	0
Eastleigh	348½	1,747	5	0
Kameelkuil	258	1,229	10	0
Dievedraai	265½	1,022	0	0
London	322¼	970	17	6
Eerstebegin . .	208¼	779	2	6
Panfontein . ..	253½	718	12	6
Rietput	157½	602	7	6

BASE METALS.

The three principal base metal ventures operating in the country have been the Rooiberg and Zaaiplaats Tin Mines in the Waterberg district and the Messina Copper Mine in the extreme northern part of the Transvaal. As to Rooiberg, in the main the company has been working a series of five north and south lodes, namely, the Union, Nascent, "H.," Moderate and Labour, intersected by five east and west fissures, namely, the Bond, Pyritic, Progress, National and Federal. After some years' experience of the behaviour of these lodes and their tin bearing qualities, it appears desirable to alter the general programme which has hitherto been in vogue of driving on practically every new discovery, and after going most carefully into the matter the management decided to do the bulk of the development in the main mine for twelve months on the Union lode, as not only has it been the most consistent ore bearer in the past, but also it has been traced a greater distance than any of the other lodes, both laterally and in depth, and, further, apparently its payable portions are not confined to one area as is the case with the Progress lode.

Some little time ago we dealt with the Zaaiplaats' report, so that it is unnecessary to dilate at length upon it in this article. We may, however, take the opportunity of saying that we fully concur with the manager, Mr. Gilbertson, when he says, as he does at the end of his report, that "the results for the year must be considered very satisfactory in view of the difficulties which beset operations during the first few months of the year." He continues: "Viewed from the standpoint of future prospects, the experience gained has been of exceptional value. The old idea of the mine as a precarious pipe proposition, dependant upon the behaviour of a few erratic bodies, has been effectively disproved. The future of the mine is clearly in the development of shoots and lenses associated with fissures underground, and in the stripping of the overburden which conceals all indications of new ore bodies at the surface. Exploratory work is proceeding on the correct lines as indicated by the results of the last year's work, and the expansion of operations is expected to counteract the fluctuations which have attended the discovery and loss of ore-bodies in the past." All this indicates a distinctly hopeful feeling, and from our own examination of the mine and knowledge of Mr. Gilbertson's methods we think he is abundantly justified in his view. At the Leeuwpoort and Welgevonden excellent progress has been achieved during the year.

MESSINA.

The year 1913 was one of the greatest importance to the Messina Company, operating close to the Limpopo River. The railway to the mine was completed at the end of the year and new concentrating and also smelter plant installed. Development is proceeding to the 10th level. The consulting engineer estimated the ore reserves at 30th June, 1913, at (a) developed and available for stoping purposes, having an average assay value of about 10 per cent. copper, 230,000 tons; (b) probable ore partially exposed and blocked out, 148,000 tons; (c) possible ore estimated down to 10th level, 100,000 tons; total, 478,000 tons. Taken on the whole, 1913 was quite a satisfactory year for the collieries, diamond and base metal mines of the country. Considerable development progress was achieved, and the profits earned were at least as great as those of 1912.

THE PREVENTION OF MINERS' DISEASES.

A Suggestion by Owen Paget, M.D., Cantab.

SCIENTIFICALLY viewed, the nose is no mere formal appendage, beautiful or otherwise. Its virtues consistently unappreciated, it is in reality from the standpoint of the physician of preventive medicine the most vital organ in the body. That the sense of smell should have so predominated the outlook of anatomists and physiologists, is curious, for, justly viewed, it appears to be a mere chance accompaniment rightly relegated to an obscure corner above the superior turbinate bones. If the postulate is correct that the primary function of the nose is to filter the air we breathe, then the obvious corollary is: "Why does it work so inefficiently?" For on the one hand is the filter and on the other hand the subjects of its imperfections in pneumono-koniosis, the ravages of pulmonary tuberculosis, the incidence of pneumonia, down to such minor ailments as sore-throat and croup. The universal acceptance by the medical profession of the necessity for the removal of adenoids is an ample expression of the evils held to arise from nasal obstruction. This subject of adenoids is, however, referred to only to be dismissed. The scope of this communication is confined to the normal individual without adenoids, without bony or cartilaginous obstructions, without hypertrophies of the turbinates. If 100 such people are taken from the community, it is improbable that more than one can swing a ten-pound hammer 12 quick successive blows with lips tightly closed. It was to establish the reason for such an occurrence that investigations have been made by me; for these is an inherent instinct in the human to start each respiration through the nose, though he usually finishes through the mouth. Now, the total amount of air which enters or leaves the lung is dependent on the size of the aperture of the glotis or the space between the vocal cords. In other words, there is no need to open the mouth to assist respiration unless the channel through the nose is smaller than the channel through the vocal chords. Although anatomically the nasal channel is larger, in practice it is apparently insufficient. If we watch a horse coming down the straight at the finish of a race, or a polo pony in a fast game, the first thing to catch the eye is the dilated nostril. Occasionally, but rarely, the upper lip may be slightly raised on the teeth. This can be explained by the fact that fibres from one of the dilating muscles of the nose pass downwards to the lip. Dilitation of the nostril in the horse is, therefore, an accompaniment of the respiratory act, especially when hastened. A similar action is seen in human beings, particularly children, when suffering from pneumonia. To re-define my premises will make the subject clearer: (1) The primary object of the nose is to filter the air passing to the lungs. (2) The amount of air passing to and from the lungs is dependent on the size of the aperture between the vocal chords. (3) Anatomically, there is no portion of the normal bony nose smaller than the vocal cord aperture. (4) Since it is inherent in the human to breathe through the nose, the reason for opening the lips to take a breath must be some obstruction in the nasal canal. (5) For the purposes of this argument, adenoids, bony and cartilaginous growths, enlargements of the turbinates, etc., are not taken into account. We assume these not to exist amongst the 100 under observation, who yet suffer from nasal obstruction. My proposition is now apparent. There is an obstruction common to practically all humans, situated between the opening of the nostrils and the bony aperture of the anterior nares. With such a theory four questions of interest arise: (a) What is the obstruction? (b) How is it that nature has been so stupid as to allow it to occur? (c) How should it be remedied? (d) If remedied, what benefit will accrue? If the lips are tightly closed and a deep breath taken, the negative pressure in the chest almost immediately causes a negative pressure in the naso-pharynx and body parts of the nose. An external positive pressure therefore results on the external surface of the lateral cartilaginous parts of the nose, with the result that this part is drawn or pressed in against the septum. This phenomenon can be observed in practically every nose, whether viewed from the external or internal surface. In many people it produces an immediate closure of the nasal canal. That nature is fully aware of the probability of such an event is shown by the fact that it has supplied the nose with no less than 12 muscles to prevent it. On the other hand there are only two muscles, the *dupressores alve nasi*, to constrict the passage. My authority for the action of these muscles is Gray, who states: "The *compressor nasi* appears to press upon the nose so as to increase its breadth and thus tends rather to open than to close the nostrils." The positon is, therefore, this: If the action of these muscles is not brought into play to keep the nostrils dilated, the very act of respiration prevents the passage of air through the nasal filter. The horse has not allowed these muscles to atrophy; the human being has. If an attempt is made to educate these muscles to action, as I have to a limited extent attempted personally, it is interesting to watch the effect of physical effort. Swinging a ten-pound hammer and keeping the lips closed, it is not my arm which tires, it is the muscles of the nose; and after a few blows their fatigue is such as to make it impossible to keep the nostril open. If, now, the fact of this universal evil to which mankind is subject is accepted, how can it be remedied? (1) By educating the muscles of the nose. This is only practicable in children in their school drill. (2) By operation. On no account should any of the operations given in text-books on diseases of the nose, which interfere with the inner surface of the nostril, be employed. A buried suture attaching cartilage to nasal bone is all that is required. (3) By the use of silver nasal props or other supports. Now, admitting that this obstruction exists and can be overcome, and that all inspired air can be made to pass through the nose, what criterion have we that the filter will be efficient? Professor Ballinger, in his classical book on "Diseases of the Nose, Throat and Ear," ascribes to the nose four functions, Olfactory, Phonatory, Respiratory and Gustatory. Without wishing to offensively oppose so judicial an authority, who, as a matter of fact, lays most special emphasis on the respiratory action of the nose, I will yet ask one question. Is it possible to find a single structure in the nose that is not there obviously for filtration? It is, as already pointed out, a preposterous absurdity to allow the occurrence of feeble nerve filaments in an out of the way corner of the nasal area to warp our judgment. But this is not the only fetish. The sinuses are cited as instruments of phonation. Will any sane man tell me that a sea-shell is less a sea-shell because a nigger blows music through it? To those desirous of an hypothesis for the functions of the sinuses, I would suggest a visit to a gold mine, and an inspection of a Ridgway filter. Cavities capable of containing compressed air and fluid must be invaluable to discharge slimes. Nerve supply, circulatory supply, the expansion and contraction of the turbinates, the hairs at the orifices of the nostrils, the angulation of the nasal passage, the cilive, the mucous glands and the curved shell character of the turbinates are each and all contrivances the most ingenious for filtration. The nose being a filter, why doubt its capabilities? If our lungs which nature appreciates as being so delicate as to require a filter can still in such numbers resist, how infinitely probable is it that an organ specifically designed for the purpose is competent to carry out the work put upon it. We are justified surely in coming to the conclusion that the inspired air can be made to pass through the nose, and that if it does so it will be properly filtered. Now, what does proper filtration mean? It stands for the abolition of pneumono-koniosis and allied disorders. It should cause an enormous diminution in pulmonary tuberculosis, pneumonias, influenzas, etc. Viewed from a broader aspect, it means that operatives in mines and factories will not be damaged by their occupations. The wealth of the world can increase without accompanying misfortunes. It will diminish that childish system of economics which spends millions on the already derelict and grudges thousands to prevent such disasters and unhappiness. In conclusion, it gives me much pleasure to restore to its proper sphere of usefulness an organ which mankind till now has regarded as only worthy of pugalistic enterprise."

MORE CRITICISM OF THE RAND'S TECHNICAL METHODS.

Points Which Critics Do Not Appreciate—A Vindication of Methods on the Main Reef Series.

One or two London technical contemporaries in criticising the paper read by Mr. William Cullen before the Chemical, Metallurgical and Mining Society of South Africa on electric blasting object to Mr. Cullen's statement which read: "In view of the fact that in practically all of its branches Rand mining is probably the most up-to-date in the world, it appears somewhat extraordinary that until quite recently no organized attempt has been made to test the possibilities of electric blasting." One paper remarks: "This is not said with undue arrogance, but it expresses a fallacy that has been a constant check to technical progress on the Rand. The idea that the mining and metallurgical practice of the Witwatersrand was ahead of that of the rest of creation, and the calm assumption that everything worth while had been tried locally, accounts for many egregious blunders and belated applications. Whenever a man or a community is too smart to learn, he or it is in a bad way. Blasting by electricity is old in any but a geologic sense.

THE RAND'S PECULIAR CONDITIONS.

The statement that in the past the Witwatersrand has been content to rest on the calm assumption that everything worth while has been tried locally cannot be allowed to pass unheeded. From time to time writers in Australian and American papers decry Witwatersrand metallurgy and dilate upon the alleged lack of enterprise exhibited, whilst a London contemporary is now disposed to look likewise on mining practice along the Main Reef gold field. It seems to us that in the first place critics do not fittingly realise the conditions under which the auriferous conglomerates of the Witwatersrand are worked, conditions which do not obtain in any of the American or Australian fields. We refer, of course, to the employment of coloured labourers with white supervisors. It is hardly necessary to state that the efficiency of this labour is poor and that the intelligence of the African mine worker compares very unfavourably with the intelligence of the skilled white mine workers of "all white" countries. For this reason many devices and innovations have to be introduced with caution and care on the Rand. We do not say that this has been a major consideration in regard to the introduction of electric blasting on the Rand, but it nevertheless is a consideration which bears on Main Reef practice generally and which should be taken into account by our critics. Taking into consideration the nature of the great majority of the labourers employed on the Rand and the perpetual labour troubles of the Reef the magnitude of operations for an industry only a quarter of a century old must surely be deemed highly creditable. Then as to the adoption of new methods and devices no one having knowledge of the true facts of the case can allege that the Rand is not ever ready to experiment with such new methods and devices, and if found satisfactory to adopt them either above or below ground, with, of course, due regard to the nature of the labour force employed.

THE ORE TREATMENT ASPECT.

Then, again, in regard to metallurgy, in two or three recent issues of this journal we printed extracts from the statements of overseas critics of Rand metallurgical methods. Briefly stated, most of these overseas critics, whilst applauding the general organization and magnitude of operations on the Witwatersrand, found fault with the metallurgical practice of the Main Reef series. One or two of them attacked the methods pursued in mills and cyanide works on the ground that they are antiquated and conservative. Other technical visitors who have recorded their impressions appear to find fault with Witwatersrand metallurgists in that they have borrowed ideas from all other mining countries. On the face of it these statements seem contradictory to one another. If the argument that our equipments and devices are obsolete is tenable, then the view that the Rand is to be condemned because our technical experts have not been slow to appreciate the value of the ideas of other mining camps cannot very well be supported, for it obviously infers a denial of the first-named statement. The essential view which most of these critics seem to lose sight of is that the primary object of mining is the earning of profits for shareholders. The enunciation of this basic economic fact leads one on to a consideration of a number of logical corollaries. In the first place it should be recognised that progress in ore treatment means making more profits from the same grade of ore. It may or may not, however, involve (a) new processes or devices—a "different" method or device is not necessarily a "better" one; (b) a reduction in working cost; (c) higher percentage recovery. Critics who have machinery or processes to exploit consider that the employment of a new device or a new method is synonymous with progress. Often they do not take best results but those which favour their own purposes. Progress may involve the use of new devices or the employment of new methods, or it may consist in (a) better use of existing appliances; (b) economy through better arrangement of known devices; or (c) better organization of work. On the Rand all types of practice are represented, from those of the pre-war epoch to those of 1913, but no individual existing plant represents all known "best" practice. During the last few years there has been a large accumulation of knowledge requiring to be digested and profitably applied. Local conditions make many devices and methods unsuitable here, as, for instance, the large scale of operations precludes the "small handy machine" of limited capacity, just as a 3s. per day Kaffir may be more economic than a mechanical device with an 8s. per day white man. Another important consideration is that many devices have been tried locally and have been found wanting, which are claimed to work well elsewhere. The results of the successes only are made public: experience with failures is generally kept quiet for obvious reasons. Then, too, it must not be overlooked that the low average grade of ore and large sums of capital in plants and interests involved on the Rand preclude rash changes being recommended by those who are trustees for shareholders, and gambling merely in the name of progress with shareholders' money is a breach of faith. Notwithstanding all this, it must be admitted by all unprejudiced critics that Rand practice is good. At present banket is treated with a total residue at 0·3 dwt. at a total cost from shaft to dump of 3s. 2d. per ton. In fact, Rand practice of to-day represents combined efforts of many able men from every part of the world for a quarter of a century; the combined result of large capital and experimental expenditure. It is essentially a process of evolution and survival of the fittest. Note, too, that there is very little scrapped machinery, representing waste of shareholders' money on these fields. Gradual development has usually admitted of utilization of existing plant combined with its extension on more modern lines. Another important aspect of progress is this: At any time and on any mine there is an "economic limit" of extraction or residue beyond which it does not pay to go, since such extra gold costs more than it is worth. Other essential facts to remember are the simple nature of the Rand ore, which does not require many appliances in use elsewhere. The large scale of operations makes organization of great importance, and the group system with specialist staff at the disposal of each mine gives these mines advantages single companies cannot afford. To sum up, we believe that in mining practice generally, having regard to the class of labour employed, in crushing practice, and in stamp and tube milling and classification with limited supply of water the Rand is ahead of the rest of the world. When an appliance from abroad (*e.g.*, hammer drills and tube mills) which is suited for use here arrives it is promptly adopted and fully utilized. There are probably more hammer stoping drills and tube mills in use on the Rand to-day than anywhere else in the world.

MINING AND DIAMOND DIGGING IN THE KLERKSDORP DISTRICT

Review of Last Year.

THE position of the gold mining industry in the Klerksdorp district has, according to the annual review by the *Klerksdorp Record*, remained practically stationary during the year, the output being but a few thousand pounds more in value in 1913 than in the previous year. No new capital is coming into the country, and the expectations which had been indulged in that the Afrikander, Rietkuil Mines and other Rietkuil properties might make a move have not been fulfilled, and no move is likely to be made until such time as financial matters assume a more favourable aspect, and capitalists feel more confidence in the stability of affairs here. The labour troubles and political differences have undoubtedly combined to create a condition of things which has been disastrous to the whole Union, farmer and townsman alike. The political atmosphere of Europe appears to be tolerably clear at the present time, and if this agreeable condition of the world continues, there is every prospect that the present financial crisis may ease off, and that capital may begin to flow uswards and gladden our hearts. The Warren Hill and Quest mines have been steadily crushing throughout the year, and have contributed the greatest portion of our output. The Ariston, having worked out the payable portion of the mine, closed down early in the year, and the property was put up to auction and sold. The property is on what is known here as the Boschrand, being the same deposit as that known on the Rand as the Black Reef, the gold contents of which become less as depth is attained. Much prospecting had been done to prove the existence of payable ore below the depth reached by the Ariston workings, without good result, and after an existence of about 25 years the property has been abandoned. Much activity has prevailed at the Machavie G.M. Company, which owns property on the Black Reef on the farm Eleazar. Difficulties of extraction have up till recently been the worst cause of trouble, the value of the ore being most satisfactory. In 1912, as stated in our last review, the company had been reconstructed and additional capital obtained, Dr. Schlesinger being the controlling power. The reduction and extraction machinery has been added to, overhauled and rearranged, and crushing has been proceeding for some months with satisfactory results, the grade of the ore being fully maintained. Concentration is resorted to and the proceeds treated at the Rand, and in this way the difficulties hitherto attending the extraction have been overcome. Mr. Lars Pedersen is still at the helm of the operations. In consequence of the discovery of the reef at a point a long way from the outcrop during sinking operations for a well, and the value being satisfactory, several hundred claims on the dip of the Machavie property and also the extension have been acquired, mostly by the people concerned in the Machavie, and we hope to hear at no distant date of some movement with regard to them. The Vaal River Goldfields, which we announced in our last review as having erected a five-stamp mill on the kopje east of the railway station, is still at work. An additional five stamps have been erected alongside the first five, an extraction plant has been added, and all necessary machinery for working the new plant has been erected. Everything has been roofed in, a tramway from the mine has been completed, and an early start is to be made with the property under the management of Mr. H. E. Stockman, who is most hopeful of success. Cheapness of working is the great advantage which will assist this property. The spot selected for the plant is an ideal one, and it is difficult to realise that it has been neglected in the past. The kopje is a fairly steep one and about 100 feet high, yet the summit is only slightly higher than the mine headgear. The ore once put into the mill will go through the various processes without any handling whatever, and there is room below the lowest level of the plant for many millions of tons of residues. The output for the district during the year has been as follows:—

	Ozs.	Value
January	2,568	£10,[illegible]
February	2,416	10,262
March	2,652	11,265
April	2,791	11,856
May	2,[illegible]	[illegible]
June	2,217	9,417
July	2,563	10,890
August	2,688	11,417
September	2,821	11,983
October	2,977	12,647
November	4,173	17,725
December (approximate)	3,000	13,000
	33,240	£141,455

Of the properties contributing to this total, the Quest is the only one concerning which any details have been made public, and the following figures may be quoted:—

	Revenue from gold.	Profits
January	£2,916	£335
February	2,709	233
March	3,379	447
April	3,316	301
May	3,214	97
June	3,147	154
July	2,944	142
August	2,996	238
September	3,213	671
October	3,381	911
November	2,784	613
December	2,950	710
	£36,949	£4,852

The district output since the year [illegible] as follows

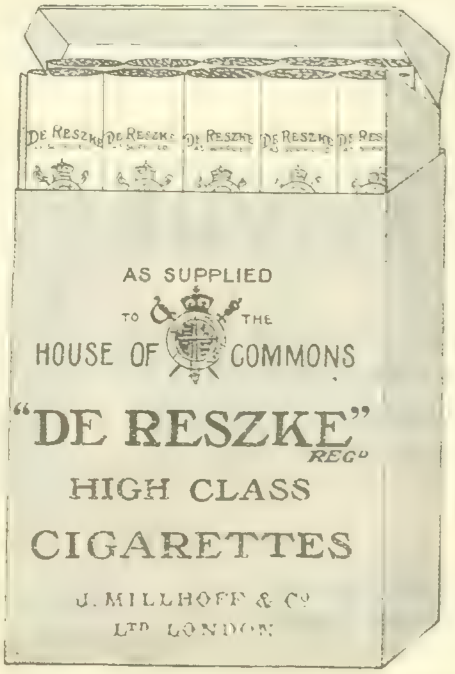
Year.	Ozs.	Value.	Year.	Ozs.	Value.
1903	1,437	£5,748	1909	17,048	£72,485
1904	2,121	8,484	1910	18,365	78,836
1905	14,146	56,584	1911	30,745	130,351
1906	11,081	[illegible]	1912	31,718	134,743
1907	8,634	34,536	1913	33,240	141,455
1908	12,559	50,636			

DIAMOND DIGGING.

In 1911 alluvial diamonds to a total of 37,861½ carats, value £198,854 10s., were produced from the various diggings in the Klerksdorp mining district (which comprises the area known as the South-Western Transvaal). In 1912 the production amounted to 79,708⅝ carats, value £386,668 3s. 3d., and in the first half of the past year the output gave promise of reaching a value exceeding half-a-million, the monthly total to June averaging over £46,000. The latter half of the year has, however, failed to maintain this average, a slump setting in which was attributed to a decrease in the scale of prices offered; while during October an exodus of diggers began to Killarney, in the Vryburg district, where a digging was proclaimed on November 8th, by which time diggers had been attracted from every Transvaal field and those remaining behind were somewhat unsettled by the glowing reports in circulation. The subsequent doings at Killarney were such, however, as to remove a good deal of the glamour, and many diggers returned to their former haunts, so that the prospects point to the early months of 1914 seeing the output returns again showing much higher totals.

Of the individual diggings we have only the figures for eleven months, and these show that Bloemhof has easily maintained first place, though producing a lower total than in 1912; while Dievedraai, Koppiesvlei and Eastleigh put in a close race for the next places. In all there were 68 different localities from which returns were made, and of these there were 25 which exceeded £1,000 for the eleven months, as follows:—

	£	s.	d.
Bloemhof	£90,502	1	6
Dievedraai	43,886	3	0
Koppiesvlei	43,194	13	0
Eastleigh	42,444	16	6
London	35,817	14	6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Rietput	28,246	5	6
Avondster	18,319	8	0
Eerstebegin	16,203	17	0
Panfontein	13,291	11	0
Mooifontein	10,811	8	0
Zwartlaagte	7,763	5	0
Goedgenoeg	6,860	12	6
Kameelkuil	6,429	0	0
Maroetjesfontein	5,792	16	0
Christiana	5,612	11	9
Olivenfontein	5,211	5	6
Schweizer-Reneke	4,068	17	6
Modderkraal	3,959	18	6
Kuilfontein	3,030	2	6
Grootdoorns	3,025	17	6
Biesjeslaagte	2,664	15	0
Blesbokfontein	1,528	12	0
Weltevreden	1,402	4	6
Diamantdoorns	1,304	5	0
Kromellenboog	1,255	12	6

The returns from our local diggings at Eastleigh have been remarkable. Except in the first few months of the year the number of diggers working there have been very few, yet the output, including the finds at the other camp on the same farm, totals a value of £49,305 9s. for the eleven months, which brings it second on the list as a diamond producer, and which is considerably more than half that of the returns from Bloemhof, the first on the list with a contribution of £90,502 1s. 6d. to the output. The diamonds found at Eastleigh average a larger size than those of other diggings, and the quality and consequently selling value is much higher per carat than those of any other fields. At present and for the past few months not more than fifty people are working there, many having been attracted to Killarney, and as yet the return trek has not begun. As most promising looking indications of the presence of diamonds existed on the Klerksdorp Commonage, and a number of prospectors were very eager to try their luck, it has been decided to allow private prospecting on the western portion of the town lands, and regulations have been drafted and passed to control such prospecting. The portion of the Commonage thus allotted is promising, but the most favoured portion is a strip along the Schoonspruit which the Council was unwilling to throw open owing to an impression that the area would be valuable as agricultural land under a contemplated irrigation scheme, but the ground does not appear to be suitable for this purpose and may yet be utilised as a diamond digging should prospects prove favourable.

MINING MEN AND MATTERS.

R. G. Pearson, A.I.M.M., M.I.M.E., is returning to South Africa for a visit, after some years' absence in German South-West, Straits Settlements and Nigeria.

* * * *

The eighteenth annual general meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday, 26th January, 1914, at 8.30 p.m. Business: (1) To receive and consider the annual report and statement of accounts for the year ending 31st December, 1913: (2) to elect twelve members of Council in place of Messrs. A. von Dessauer, A. L. Hall, H. S. Harger, G. G. Holmes, H. Kynaston, J. G. Lawn, H. B. Maufe, E. T. Mellor, E. H. V. Melvill, A. W. Rogers, D. Wilkinson, and R. B. Young, who retire under the rules of the Society; (3) to elect a President, Vice-Presidents, and Honorary Secretary for the ensuing year; (4) to elect an Auditor for the ensuing year. Mr. A. L. Hall will deliver his Presidential Address.

Messina Copper.

During December the old mill ran 25 days and the new mill 15 days, treating 5,040 tons of ore. The ore smelting furnace ran during the month, treating 197½ tons of middlings. The total production for shipment was 930·21 tons, the average assay value being 40·60 per cent. copper. 882 tons of middlings, average assay value 8 per cent. copper, were also produced. Development footage, 309 ft., including 37 ft. sinking main No. 5 shaft, which has reached a total depth of 1,041 ft.

Transvaal G M. Estates

The following are the particulars of this company's output for the month of December, 1913:—Central Mines: Tons crushed, 11,300, yielding 7,863·447 fine ozs. Elandsdrift Mine: Tons crushed, 740, yielding 757·772 fine ozs. Vaalhoek Mine: Tons crushed, 1,520, yielding 525·867 fine ozs. Estimated value of month's output, £38,371; estimated profit for the month, £21,905.

Glynn's Lydenburg.

The following are the particulars of the company's output for the month of December, 1913:—Tons crushed, 3,845, yielding 2,089 fine ozs.; estimated value of month's output, £8,775; estimated profit for the month, £4,921.

New Eland Diamonds.

The following are the washing results of the New Eland Diamonds for December:—No. of loads washed, 15,068; diamonds found, 2,476 carats; percentage, 16·43. Recovered from "sortings" re-treated through pulsator; No. of loads re-treated, 58; diamonds recovered, 230 carats. Total recoveries for December, 2,706 carats.

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Rhodesian Section.

LATEST MINING NEWS.

Edmundian Copper—Salisbury Small Workers—Eldorado's Report—Rose of Sharon—Hay G.M. Co.—The Giant—Battlefields Co.'s Report—Thistle-Etna—"Official Opening" at the Cam and Motor—The Sabiwa—Rhodesia Broken Hill.

THE South African Copper Trust, Limited, is offering for tribute the Edmundian Copper Mine, near Macequece, together with machinery, plant and buildings on the property. Tenders will be received by the agents of the company, at their office, Taramal House, Main Street, or P.O. Box 13, Bulawayo, up to 28th February, 1914, from whom all information may be received. The mine has fair prospects, but thus far has had a very chequered career and in the existing depression the directors are unable to advocate any other scheme of working than that mentioned above.

* * * *

A well attended meeting of small workers, tributors, and prospectors of Salisbury and the Northern Districts was held at the Commercial Hotel the other day. The following resolutions were passed:—(1) Claim licences: That these be imposed only for those months during which properties are actually producing. (2) Labour tax: That a person, syndicate, or company employing up to 50 boys be exempt from the 1s. tax. (3) Capitation fees: That capitation fees for small workers be reduced to the same scale as applies to farmers. (4) Voluntary labour: That greater facilities be granted to voluntary labourers coming into the territory. (5) Dieting regulations: That the present regulations are too severe upon small workers; that they should be amended so as to allow game to be substituted for butcher's meat when the mine is ten or more miles distant from a butcher; and that the Compound Inspector's duties be confined to the sanitation and housing of natives only. (6) Reduction of royalty: That all small workers or syndicates be exempt from royalty up to £300 output per month. (7) Railway rates: That rates on mining machinery, accessories, stores, explosives, etc., be reduced to the same scale as agricultural implements, and, further, that a special rate should apply to second-hand plant. (8) Protection: That credit should be given for work done by trenching; that two cubic yards of trenching count as one foot of development. A deputation was also appointed consisting of Messrs. J. A. Morris, G. D. Bates, J. F. Kapnek, C. Downie, and the Secretary, to obtain an interview with Sir Starr Jameson and lay before him certain matters of vital importance to the industry. It was further proposed to form an Association at an early date, and all those interested who wish to become members are requested to communicate with the Secretary, Mr. G. S. Bremner, Box 514, Salisbury.

* * * *

The quarterly report on the Eldorado mine to the 30th September last, contains the following:—Total ore reserve on hand at date: 46,457 tons; value 14·1 dwts. Development: No. 10 level: Vertical depth, 1,140 ft. (vertical shaft). W/1J main winze at 145 ft. west of the vertical shaft has been sunk a further 28 ft. Total depth, 115 ft. The first 20 ft. and the last 20 ft. are not on reef. Average assay value for 75 ft. is 8·0 dwts. over 29 ins., or 7·2 dwts. with high values reduced. W/2J parallel winze at 90 ft. west of the vertical shaft has been sunk a further 47 ft., assaying 1·1 dwts. over 64 ins. Total depth, 105 ft. No. 11 level: Vertical depth, 1,255 ft. (vertical shaft). The main drive east and west of crosscut No. 1 north have been driven to a total length of 139 ft., of which 120 ft. is in the pay shoot assaying 33·5 dwts. over 102 ins., or 13·4 dwts. with high values reduced. Crosscut No. 1 north at 148 ft. west of vertical shaft has been driven a total distance of 49 ft. The parallel reef was exposed from 33 ft. to 39 ft. in, assaying 1·2 dwt. over 72 ins. In addition to the above, sundry short crosscuts, totalling 72 ft., have been driven through the reef in order to prove it at different points. Milling results: The following are the results obtained from milling and cyaniding during the three months ended September 30th, 1913:—Gold in reserve at 30th September, 1913, 2,451 ozs. Working expenditure and revenue for quarter ended September 30th, 1913: Total value of ore milled, £38,042 5s. 3d., or £1 12s. 10·185d. per ton; total working costs, £25,857 18s. 11d., or £1 2s. 3·934d. per ton; estimated working profit, £12,184 6s. 4d., or 10s. 6·251d. per ton. Profit brought down, £12,184 6s. 4d.; add sundry revenue, £226 10s. 4d.; total, £12,410 16s. 4d. Capital expenditure: The following expenditure has been met out of capital:—Vertical shaft, £4,312 11s. 11d.; machinery, plant, buildings, etc., £1,307 14s. 6d. General: It is anticipated that crushing can be continued on the present milling basis until 31st December, 1913, but as the parallel reef still continues unpayable on the 11th level, the engineers indicate that it will probably be found advisable to reduce the tonnage to 4,000 tons a month—which should produce a monthly profit of £3,000—but no decision on the point can at the moment be arrived at.

* * * *

The report of the Rose of Sharon and Shamrock Gold Mines (1911) for the year ended September 30 states that the mines were let on tribute on May 10 last, and the monthly reports show that considerable development work has been done with satisfactory results. The balance sheet shows a cash balance of £1,236.

* * * *

The report of the Hay Gold Mining Company, Ltd., for the year ended June 30 last, shows a profit of £1,429. This amount has been added to the sum carried forward last year —namely, £8,768—making a total available profit of £10,198. Of this amount £7,027 has been transferred to the reserve account. The sum to be carried forward to next year's account is, therefore, £3,171. The reserves in last year's account stood at £10,000. To this amount has been added the £7,027 referred to, making the total amount of the reserve £17,027. Owing to the position at the mine, the directors have written off the whole of the expenditure on the claims up to June 30 last, amounting to £10,527, so that the reserve account now stands at £6,500.

* * * *

A cablegram was received at the London office of the Giant Mines of Rhodesia in mail week from the Salisbury office of the company, stating that borehole No. 4 on the Giant South property at a depth of 246 ft. had passed through 21 ins. of mineralised schist assaying 5 ozs. 3·7 dwts. per ton.

* * * *

The directors of the Battlefields (Rhodesia), Ltd., in their report for the year ended June 30th, state that the revenue amounted to £4,896, and the expenses to £1,617. The profit, therefore, was £3,279, the greater portion of which has been devoted to writing off depreciation on investments, plant, and buildings. The tributors have worked continuously during the period under review and down to the present date.

* * * *

The position at the Thistle-Etna Gold Mines does not seem to improve. According to a report for the period ended September 30 last all development work at the Faith Mine has now been suspended, operations having been very disappointing, no payable ore being exposed. No development work has been done at the Thistle Mine, but it is proposed to explore the Etna Mine, which has yielded more satisfactory results, as rapidly as possible. The ore reserves at September 30 last were estimated at 18,227 tons, valued at 7·63 dwts. per ton.

* * * *

At the Cam and Motor property it is understood that trial runs of the various sections of the plant have given complete satisfaction to the management. It is now announced that the "official opening of the mine ore reduction works" is to take place to-day, when the directors and general manager will be entertaining a number of friends at the works on the occasion, special trains being run from Salisbury for the purpose. It is natural to suppose, following on this announcement, that from February onwards regular monthly outputs will be declared.

* * * *

During November 138 ft. of development have been executed at the Sabiwa mine. Kopje section, fourth level drive south has been extended 40 ft. during the past month, making a total of 237 ft. Crosscut No. 5 has been extended 22 ft. during the past month, making a total of 35 ft.; 22 ft. of the reef are exposed, average assay value, 13½ dwts. Hanging wall not exposed. Crosscut No. 6, 215 ft. south of shaft, driven crosscut 6 ft. in reef matter. First section of 3 ft. assays 1 oz. 6 dwts. Third level drive south, winze No. 2 to fourth level has been sunk 13 ft. during past month; total, 34 ft.; average assay value to the present depth, 1 oz. 1 dwt. over section of reef exposed. Second level, drive south, winze No. 2 to third level has been sunk 22 ft. during the past month; total, 54 ft.; average assay value to the present depth, 17 dwts. over section of reef exposed. Long John section, footage for the month, 24 ft. Third level drive south, at 115 ft. from shaft, reef is 36 ins. wide, assaying 6¾ dwts. per ton; at 120 ft. from shaft reef is 28 ins. wide, assaying 11½ dwts. per ton. Prospects look very well at this level. Developments hampered by scarcity of labour.

* * * *

The report of the Rhodesia Broken Hill Development Company for the year ended August 31, 1913, states that in view of the estimated tonnages of lead and zinc ores already developed, it has not been considered advisable to incur any expenditure on the mines during the period under review beyond what was necessary to maintain the principal works. The consulting engineers advise that the results as regards lead values are satisfactory and that the erection at the mine of a preliminary plant capable of treating 50 tons of ore per day is justified. With regard to the zinc contents of the ore, the results of a large number of experiments made have shown that a satisfactory extraction can be obtained. Owing, however, to the heavy capital expenditure which would be involved by the erection of a zinc treatment plant, it is the intention of the board to erect the plant for dealing with the lead values of the ore before proceeding with the erection of a plant for recovering the zinc values. A schedule accompanying the report states that on No. 1 kopje the tonnage exposed by present work to water level (18 ft. below surface) is estimated at 140,000 tons, containing an average of 26 per cent. lead and 22 per cent. zinc, chiefly as carbonate, though sulphides occur. The average metal contents of the ore is 48 per cent. On No. 2 kopje the consulting engineers estimated the ore contents to be 300,000 to 320,000 tons and that the average assay value may be expected to be about 32 per cent. zinc.

Rezende Mines.

The results for the month of December, 1913, were as follows:—Estimated profit: Central Section, £1,629; Old West Workings and Penhalonga Sections, £724; total, £2,353.

Lonely Reef G.M. Co.

The following are the particulars of output of gold from the Lonely Mine for the month of December, 1913:—Mill ran 20·3 days, crushed 4,610 tons; yield of fine gold, 1,148·298 ozs., value £4,827 8s. 0d.; slimes treated, 4,610 tons; yield of fine gold, 2,524·998 ozs., value £10,615 8s. 3d.; total recovery fine gold, 3,673·296 ozs.; total value, £15,442 16s. 3d.; estimated profit, £7,343. Note: The low tonnage is due to stoppage for completion of repairs to mill engine, commenced last month.

THE SOUTH AFRICAN SCHOOL OF MINES AND TECHNOLOGY.

Department of Mining and Surveying.

Applications are invited for the position of Assistant to the Professor of Mining and Surveying. Duties to begin 1st March, 1914. Salary £40 per month, rising by two annual increments of £5 to £50 per month. The work includes both day and evening lectures with field-work.

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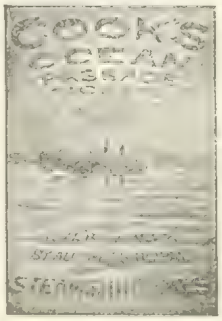

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THE DECEMBER OUTPUT IN DETAIL.

Returns for the Last Month of the Year.

The following are the salient figures for the December output, as declared by the Chamber of Mines:—

Total, 1912	9,121,299 ozs.
Value	£38,757,560
Total, 1913	8,791,860 ozs.
Value	£37,358,040
Decrease	322,439 ozs.
Value	£1,399,520
Witwatersrand, 1913	8,430,998 ozs.
Value	£35,812,605
Decrease	329,570 ozs.
Value	£1,370,190
Outside Districts, 1913	363,826 ozs.
Value	£1,515,435
Decrease	6,869 ozs.
Value	£29,330

Total output	672,815 ozs.
Value	£2,857,938
Decrease	671 ozs.
Value	£2,850
Witwatersrand	642,786 ozs.
Value	£2,730,383
Decrease	1,534 ozs.
Value	£6,514
Outside Districts	30,029 ozs.
Value	£127,555
Increase	863 ozs.
Value	£3,664
Total Stamps	9,722
Increase	57
Witwatersrand	9,170
Increase	55
Outside Districts	552
Increase	2

The yield and profit aspect for the past two years for the Rand is as follows:—

	Days.	Daily yield. £	Daily profit. £
1912—			
January	31	97,188	26,182
February	29	98,863	28.032
March	31	100,011	35,167
April	30	100,071	29.932
May	31	102,350	30.961
June	30	102,312	34,583
July	31	100,841	32,876
August	31	100,328	33,178
September	30	101,449	33,841
October	31	101,134	34,072
November	30	103,035	34,677
December	31	102,200	35,734
1913—			
January	31	104,272	35,112
February	28	106 556	35,814
March	31	104,182	35,340
April	30	107,023	35,931
May	31	104,323	35,091
June	30	101,417	33,645
July	31	85,654	24,284
August	31	95,599	32,518
September	30	95,774	[illegible]
October	31	94,206	31,503
November	30	91,230	30,848
December	31	88,077	[illegible]

The Labour Position.

The figures for the past three months of the numbers employed by members of the W.N.L.A. at the last day of each month read:—

	October.	November.	December.
Gold mines	148,882	147,569	150,012
Coal mines	9,377	9,286	9,516
Diamond mines ...	12,712	12,680	11,811
Totals	170,971	169,535	171,339

The Stamp Position.

The fluctuation in the number of stamps employed in the Transvaal shows an increase of 57, arrived at as follows:—Rand: Increases: Knight Central, 5; Main Reef West, 10; Randfontein Central, 75; Robinson Deep, 5; Van Ryn, 5; Van Ryn Deep, 10; total, 110. Decreases: Consolidated Langlaagte, 20; Vogelstruis Estate, 5; Miscellaneous, 30; total, 55. Net increase, 55. Outside: Increase: Miscellaneous, 7. Decrease: Sheba, 5. Increase, 2.

Twelve Leading Companies.

The principal details and results of operations of the first twelve are:—

	Stamps.	Tubes	Tons.	Value.
Crown Mines	660	24	165,000	£237,941
Randfontein Central ...	875	27	181,101	223,367
East Rand Proprietary	820	25	127,600	212,106
Ferreira Deep	245	6	54,550	99,010
Robinson	250	6	53,100	94,397
New Modder	180	7	38,650	77,555
Rose Deep	300	7	59,600	75,975
Robinson Deep	105	8	49,000	74,042
City Deep	150	9	37,800	73,664
Simmer and Jack ...	320	7	68,500	73,112
Village Main Reef ...	220	5	33,700	69,731
Knights Deep	400	11	74,800	66,413
	4,525	142	943,401	£1,377,313

Group Profits.

The following are the profits returned for October, November and December by the mines controlled by the different groups:—

	October.	November.	December.
Rand Mines:			
Subsidiaries	£228,246	£212,831	£211,158
Eckstein group ...	219,834	199,463	214,786
Barnato group	104,597	102,887	100,264
Gold Fields group ...	77,942	79,022	77,318
Robinson group	86,689	83,080	75,076
East Rand Proprietary...	83,504	79,252	75,010
General Mining group . .	64,159	63,174	61,547
Neumann group	59,873	57,049	58,656
Kleinfontein group .	25,156	21,728	21,182
Cons. Mines Selection . .	16,833	17,486	21,869
Goerz group . .	11,782	9,474	11,456
Totals	£976,615	£925,446	£928,322

Increases and Decreases.

The following returns of the December output have been filed with the Chamber of Mines. Increases and decreases compared with November are appended:—

The Witwatersrand.

	Nov. £	Dec. £	Increase. £	Decrease. £
Aurora West	18,439	18,647	208	
Bantjes Consolidated	27,037	27,334	297	
Brakpan Mines	61,936	65,666	3,730	
City Deep	70,776	73,664	2,888	
City and Suburban	46,428	46,950	522	
Consolidated Langlaagte	56,465	56,567	102	
Consolidated Main Reef	29,840	30,393	553	
Crown Mines	241,849	237,941		3,908
Durban Roodepoort Deep	30,788	30,533		255
Durban Roodepoort	15,084	15,174	63	
East Rand Proprietary Mines ...	218,601	212,106	—	6,495
Ferreira Deep	99,460	99,010	—	450
Geduld Proprietary Mines	27,988	30,308	2,320	
Geldenhuis Deep	62,807	63,601	794	
Ginsberg	19,425	18,363	—	1,062
Glencairn Main Reef	14,497	14,663	166	
Knight Central	24,735	25,019	284	
Knights Deep	68 686	66,413		2,273
Langlaagte Estate	57,251	58,682	1,431	—
Luipaardsvlei Estate	57,251	58,682	1,431	

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	Nov. £	Dec. £	Increase. £	Decrease. £
May Consolidated	10,178	9,774	—	404
Main Reef West	24,582	25.117	535	—
Meyer and Charlton	36.186	35,549	—	637
Modderfontein B.	62,208	57,026	—	5.182
New Goch	30,291	29,866	—	425
New Heriot	10,649	9,460		1,189
New Kleinfontein	63.155	64,090	935	—
New Modderfontein	76,374	77,555	1,181	-
New Primrose	32,712	32,151	-	561
New Rietfontein	14,846	13,041		1,805
New Unified	15,394	15,785	391	—
Nourse Mines	62,667	60,067	—	2,600
Princess Estate	27,644	28,264	620	—
Randfontein Central	237,949	223,367	—	14,582
Robinson Deep	64,379	74,042	9,663	—
Robinson	92,371	94,397	2,026	-
Rose Deep	80,915	75,975	—	4,940
Roodepoort United	21,209	21,850	641	
Simmer and Jack	72,088	73,112	1.024	—
Simmer Deep	42.426	44,831	2,405	—
Spes Bona	3,939	4,519	581	—
Van Ryn Estate	53,955	52,697	—	1,258
Van Ryn Deep	57,727	62,017	4,290	
Village Deep	64,060	62,735	—	1.325
Village Main Reef	59,235	69,731	10,496	—
Vogelstruis Estate	13,801	13,622	—	179
West Rand Central	3,883	3,963	80	—
West Rand Consolidated	25.142	26.523	1,381	—
Witwatersrand	49.015	48.785	—	230
Witwatersrand Deep	64.221	63,555	—	666
Wolhuter	40,770	40,141		629
Miscellaneous producers	12,374	7,359	—	5.015
Outside Districts.				
Barrett	726	833	107	—
Ceylon Lydenburg	986	892	—	94
Glynn's Lydenburg	7,820	8,873	1,053	—
Nigel	18,363	19,578	1,215	—
Quest	2,782	2,948	166	
Sheba	14,171	14,238	67	
Sub Nigel	8,602	11,367	2.765	-
Transvaal Gold Mining Estates	39,066	38,854		212
Worcester Exploration	4.549	4,294		255
Miscellaneous producers	26.826	25,678		1,148

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	11,237	80	—	4,390	18.647
Bantjes Consolidated	22,000	100	3	6,435	27,334
Brakpan Mines	40,356	140	8	15,459	65.666
City Deep	37,800	150	9	17,342	73.664
City and Suburban	25,150	150	2	11,053	46.950
Consolidated Langlaagte	40,600	80	8	13,317	56,567
Consolidated Main Reef	18,310	90	3	7,155	30.393
Crown Mines	165,000	660	24	56,016	237,941
Durban Roodepoort	14.094	90	1	3,566	15.147
Durban Roodepoort Deep	22,400	100	3	7.188	30 533
East Rand Proprietary	127,600	820	25	49,934	212,106
Ferreira Deep	54,550	245	6	23.309	99,010
Geldenhuis Deep	43,600	300	7	14,973	63.601
Ginsberg	14,359	80	1	4,323	18,363
Glencairn Main Reef	19,850	160	—	3,452	14,663
Geduld Proprietary Mines	19,750	60	5	7,135	30,308
Knights Deep	74,800	400	11	15,635	66.413
Knight Central	21,830	90	3	5,890	25,019
Langlaagte Estate	49.114	200	5	13,815	58.682
Luipaardsvlei Estate	18,160	60	3	4,334	18,410
Main Reef West	17,700	90	3	5,913	25,117
May Consolidated	11,400	100	—	2,301	9.774
Meyer and Charlton	14,993	75	2	8,369	35,549
Modderfontein B.	31,000	80	5	13,425	57.026
New Goch	28,020	120	4	7,031	29,862
New Heriot	6,300	70	1	2,227	9,460
New Kleinfontein	49,700	200	4	15,088	64,090
New Modderfontein	38,650	180	7	18,258	77,555
New Primrose	25,000	160	2	7,569	32.151
New Rietfontein Estate	14.500	120		3,070	13,039
New Unified	13,000	60	1	3.716	15.785
Nourse Mines	41,000	260	7	14,141	60,067
Princess Estate	23,000	60	5	6,654	28,264
Robinson	53,100	250	6	22,223	94,397
Robinson Deep	49,000	105	8	17,431	74,042
Randfontein Central	181,914	875	27	52,585	223,367
Roodepoort United	22,914	50	3	5,144	21,850
Rose Deep	59.600	300	7	17,886	75,975
Simmer Deep	57.150	180	9	10,554	44,831
Simmer and Jack	68,500	320	7	17,212	73,112
Spes Bona Tribute	5,244	40		1,064	4.519
Van Ryn Deep	37,050	80	8	14,600	62,017
Van Ryn Gold Mines	39,000	140	6	12,406	52 697
Village Deep	44,800	180	7	14,769	62,735
Village Main Reef	33,700	220	5	16,416	69.731
Vogelstruis Estate	11,714	70	—	3,207	13,622
West Rand Central	1,924	20	1	933	3,963
West Rand Consolidated	19,700	100	4	6.244	26,523
Witwatersrand	38,830	220	4	11,485	48,785
Witwatersrand Deep	44,570	245	4	14,962	63,555
Wolhuter	30 800	120	4	9,450	40,143
Miscellaneous producers		25	-		7,359

Outside Districts.

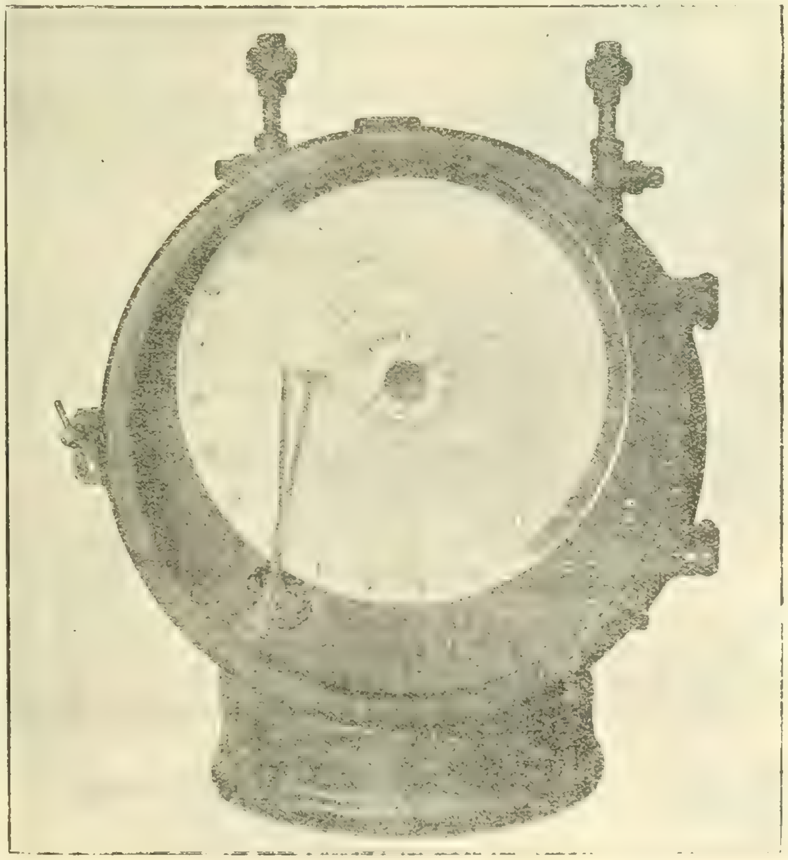
Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
HEIDELBERG—					
Nigel	13,000	75	1	4.609	19.578
Sub Nigel	4,750	25	1	2.676	11,367
BARBERTON—					
Barrett	-	—		196	833
Sheba	5,350	50	-	3.352	14,238
Worcester Exploration	4,650	40	2	1,011	4,294
LYDENBURG—					
Ceylon Lydenburg	580	5	—	210	892
Glynn's Lydenburg	3,845	20	1	2,089	8,873
Transvaal G.M. Estates	13,560	75	3	9,147	[illegible]
KLERKSDORP					
Quest	3,251	35		[illegible]	[illegible]
Miscellaneous producers		227		.	25,678

Engineering Notes and News.

Variable Speed "Cascade" Winders on the Rand.

Two winders which embody several novel and interesting characteristics have recently been installed at the Van Ryn Deep. These winders have been supplied by Messrs. Sandycroft, Ltd., of Chester, and are of their patent variable speed "Cascade" design suitable for two constant synchronous speeds, *i.e.*, 500 r.p.m. and 333 r.p.m., while at the same time capable of giving any intermediate speed between these mentioned and zero, with a uniform torque throughout. The motors have a normal rating of 700 b.h.p. and are capable of developing 2½ times full load power; they are supplied from the Victoria Falls Power Co.'s mains at 2,000 volts 50 cycles. The motors drive the main drums through single reduction gearing, and the plant is placed underground at a depth of 2,000 ft. so as to deal with the incline section of the Van Ryn Deep hoisting system. The gradient of these inclines varies from 12° approx. to 42° approx., which necessitates varying the winding speeds at certain points, which can be carried out most advantageously by either the Ward-Leonard or "Cascade" systems, so as to obtain a maximum efficiency and ideal working conditions; the maximum winding speed required is 2,500 ft. per minute. The system of control is simple, the whole operation being controlled from the driver's platform by means of one lever. The first motion of this lever in either direction controls the motor operating the oil reversing switch; a further movement of the lever operates a valve on a small air engine which, in turn, operates the controllers. The position of the valve is in accordance with the speed required. The controllers for each winder are of the Sandycroft patent screen type, and are divided into two units, one regulating the stator circuit and the other the rotor circuit. Both controllers are operated in turn by the full stroke of the common air engine on the up-going stroke, and *vice versâ* on the down-going stroke. The sequence of events is as follows:—In connection with the operation of the controllers by the air engine, the stator controller is first operated, the slate screen being lifted and so exposing a certain amount of plate area according to the speed required; the screens are eventually lifted the full amount and expose the full plate, so bringing the motor up to full "Cascade" speed, the driver's lever being pushed on to "Cascade" speed position. The lever being pushed forward beyond this position, allows the up-going stroke of the air engine to continue; the screens of the rotor controller are then raised and the stator screens lowered, until at the end of the stroke the rotor plates are fully exposed and the stator plates are again covered; this allows the motor to run at top speed. It is interesting to note that during the process of slowing down from top speed to "Cascade" speed, current is being generated, hence such winders can always be braked down to two-thirds speed on the regeneration system. With reference to the general principles of the variable-speed "Cascade" motor, we would refer our readers to the paper read by the inventor, Mr. L. C. Hunt, before the Institution of Electrical Engineers and to the papers read by Mr. M. Williams-Ellis before the A.M.E.E. and S.A.I.E.

The following are the details of operations for December at the City and Suburban. Tons milled, 25,150; gold recovered, 11,053 fine ounces; profit, £19,110.



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THE WEEK IN THE SHAREMARKET.

Firm with Little Doing—Gilt-Edged Stocks Steady.

NATURALLY the events of the week did little to promote activity in the market. After the first wave of nervousness, however, and when it was seen that the Government had the situation well in hand, quotations firmed up considerably, and the tone gradually improved towards the end of the week. Many prominent members of the Exchange have been on special police duty during the week, and this has not tended to increased business. It is quite on the cards that should the whole trouble be stamped out by Monday next, business may become brisk, as the firmness and determination of the Government have had an excellent effect on London and Paris markets. Of the more speculative counters, Pilandsbergs alone have enjoyed any dealings, the price remaining firm on good reports from the property.

* * * *

	Fri., 9th.	Sat., 10th.	Mon., 12th.	Tues., 13th.	Wed., 14th.	Thurs., 15th.
Adair-Ushers	0 6*	-	0 3*	0 3*	—	
Afrikander Props.	—	—	—	20 0†	—	—
African Farms	13 6	12 6*	13 3*	12 6	13 0	13 6
Apex Mines	16 0*	14 0*	15 0*	15 3*	15 6*	16 0*
Bantjes Consolidated	—	-	—	—	—	11 0*
Benoni Consolidated	1 0*	—	1 9*	1 9*	1 9*	1 10*
Brakpan Mines	-	—	44 6*	47 0†	—	47 6†
Breyten Collieries	25 0	25 0*	- -	25 0*		25 6
Bushveld Tins	0 7†	—	0 7†	0 7†	0 7†	0 4*
Cinderella Cons.	3 6	—	4 3†	—	3 6*	3 6
City and Suburbans	39 0*	37 0*	39 0	37 3*	37 8	37 6*
City Deeps	50 0*	49 0*	51 3*	50 0*	49 0*	50 0
Cloverfield Mines	3 10*	3 0*		4 0†	3 10*	3 9*
Clydesdale Collieries	8 0*	-	8 0*	7 6*	7 0	
Cons. Investment	17 0*	17 6*	17 6*	—	-	
Cons. Langlaagtes	24 6*	-	25 3*	24 0*	24 6*	
Cons. Main Reefs	14 9*	14 9	15 0*	14 6	14 9	15 0*
Cons. Mines Selection		-	7 0*	-		
Coronation Collieries	12 0*	12 0*	12 0*	12 0*	12 0*	12 0*
Coronation Freeholds	0 5*	0 5*	0 5	0 5		
Coronations Syndicates	3 0*		3 0*	3 0	3 0*	3 0*
Crown Diamonds	7 6*	7 3*		7 0*	7 0*	7 6*
Doornhoek Tins	5 0†	-	5 0		1 0*	
East Rand Centrals	8 0*	7 9*	7 9*	7 9*	7 6*	7
East Rand Coals	1 6*	—	—	1 6	1 6	1 6*
East Rand Deeps	1 1*	1 3*	1 1*		1 0	1 3*
East Rand Props.	36 0*	36 0*	36 6*	37 0*	36 6*	[illegible]
Eastern Gold Mines	1 9*	—			1 0*	1 0
Frank Smith Diamonds	5 0	5 0	5 0	5 0	5 3	5 5

*Buyers. †Sellers.

	Fri., 9th.	Sat., 10th.	Mon., 12th.	Tues., 13th.	Wed., 14th.	Thurs., 15th.
Geduld Props.	20 0*	19 6*	20 0*	19 6*	20 0*	20 0*
Glencairn Main Reefs	—	—	2 0*	—	—	—
Glencoe (Natal) Collieries.	—	6 6*	—	6 6*	—	6 6*
Glynn's Lydenburgs	11 0*	—	—	—	—	—
Government Areas	16 9	15 0*	16 6	15 6*	16 0*	16 0*
Jumpers	—	—	—	—	4 0†	—
Jupiters	4 0*	4 0*	4 0*	3 9*	4 0*	4 0*
Kaalfontein Diamonds	0 6*	0 5*	0 5*	0 6	—	0 4*
Klerksdorp Props.	1 9*	1 9*	1 11*	1 10*	1 11*	1 11
Knights Centrals	6 6*	6 3*	6 6	—	6 3*	6 6*
Lace Props.	2 5*	2 3*	2 3*	—	—	2 3*
Luipaardsvlei Estates	7 0*	7 6*	10 0†	6 3*	10 0†	6 3*
Lydenburg Farms	2 7*	—	—	—	—	2 6*
Main Reef Wests	6 0*	6 0*	6 0*	6 0*	—	—
Middelvlei Estates	0 10*	1 0*	1 0*	1 0*	1 0*	1 0*
Modderfontein B.	74 6*	74 6*	75 0*	—	—	75 6†
Modderfontein Deeps	33 6	32 0*	33 6	32 6	33 6	33 3
Natal Navigation Colls.	14 3*	—	—	—	—	—
New Boksburgs	-	—	—	1 0†	—	—
New Eland Diamonds	27 0*	26 6*	26 6*	26 0*	26 6*	26 6*
New Era Cons.	5 0*	5 0*	5 0*	4 6*	5 0*	5 0*
New Geduld Deeps	1 9*	1 8*	—	1 8*	1 7*	—
New Kleinfonteins	20 6†	19 0	19 0*	18 0*	19 0*	20 0
New Modderfonteins	220 0*	—	—	—	—	—
New Rietfonteins	—	—	2 9*	3 6†	—	—
Orange Diamonds	1 6*	1 3*	—	—	—	1 6*
Piggs Peak	9 0*	9 0*	9 0*	9 0*	-	9 0*
Pretoria Cements	40 0*	—	—	-	—	—
Rand Klip	1 10	1 9*	1 10*	1 9*	1 8*	1 8*
Rand Nucleus	1 9†	1 5*	1 6*	1 4*	1 6*	1 5*
Randfontein Deeps	2 9*	2 9*	2 9*	2 9*	2 9*	2 9*
Randfontein Estates	—	20 9*	20 9*	20 0*	20 0*	—
Robinson Deeps	- -	—	26 0*	—	—	—
Rooiberg Minerals	21 0	21 6*	21 0*	22 6	21 6	22 0*
Shebas	5 0*	5 0*	—	—	—	—
S.A. Land	2 9*	2 6*	2 7*	—	2 9*	2 9*
Springs Mines	10 0*	9 0*	9 9*	9 0*	8 9*	9 9*
Sub Nigels	7 6*	6 0*	7 0*	7 0*	7 6*	7 9*
Transvaal and Delagoa	-		—	38 0*	—	—
Transvaal Coal Trust	26 0*	26 3*	26 0*	-	—	26 0*
Transvaal Cons. Lands	10 0				—	-
Van Ryn Deeps	31 6	30 9	32 6	30 9	32 0	32 3
Village Deeps		33 0	-	32 6†	-	29 0
Witwatersrands	60 0*	61 0*		60 0*	61 0*	60 0*
Wit. Deeps	46 0*	47 0*	49 0*	46 6*	48 3	47 6*
Wit. Townships	19 0*	19 0*	—	—	—	19 0*
Wolhuters	12 0*	11 0*	11 6*	12 0†	11 6	11 6
Zaaiplaats Tins	28 9	27 6*	27 6*	28 0	28 0*	28 6*

*Buyers. †Sellers.

Brakpan Mines.

The following are the results of operations for December, 1913:—Stamps working, 140; running time, 23 days; ore crushed, 46,350 tons; tube mills working, 8; ore hoisted, 50,992 tons; ore from dump, 2,080 tons; waste sorted, 12.10 per cent.; fine gold declared, 15,459 ozs.; value declared, £65,092 (equal to 28s. 1d. per ton milled); working costs, £43,223 (equal to 18s. 8d. per ton milled); working profit, £21,869 (equal to 9s. 5d. per ton milled).

Sheba G.M. Co.

The following are the operations of this company for the month of December:—Crushed 5,330 tons, yielding 3,352 ozs.; estimated profit, £4,216.

Crown Diamonds.

Operations at the Crown Diamond Mine for the month of December, 1913, resulted as follows:—18,856 loads washed, yielding 1,846¾ carats of diamonds. It is anticipated that the additional hauling gear and washing plant now in course of erection will be in operation during the present month.

Blaauwbosch Diamonds.

Washing returns for December, 1913:—4,893 loads washed, 1,071 carats recovered, or 21·88 carats per 100 loads. Washing was discontinued on the 17th December, owing to a threatened fall of reef, which it became necessary to remove, and it is feared for a period of two months extraordinary reef hauling will have to be continued, so as to make the mine safe for the opening up of a new level. During this period tailings will be treated.

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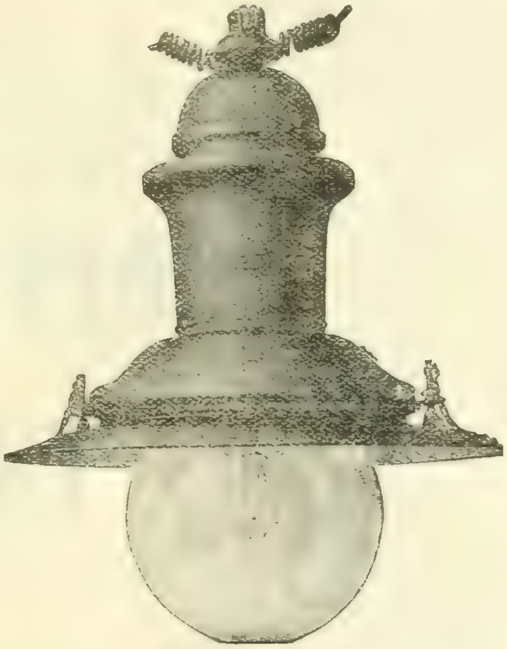

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Finance, Commerce, and Industries.

Eleven Months' Statistics.

The trade returns for the month and eleven months ending November, just issued by the Department of Customs show that alike in imports and exports the year 1913 has marked a new record in South African commerce. In 1912 the combined export and import trade just totalled a value of a hundred millions sterling. In 1913 it is probable that the complete returns will show a trade volume little short of £110,000,000. The figures relating to the total imports and exports, with corresponding details for the preceding year, are as follows:—

Eleven Months.	1913.	1912.	Increase per cent.
Imports	£39,048,444	£36,357,030	7·4
Exports	61,180,029	57,264,963	6·8

These increases are, as will be seen, all the more noteworthy in view of the drought and the unsettled industrial conditions of the past six months. The chief features on the export side of the account are the large increase in the diamond export, the substantial advance in the exports of such staple products as wool and ostrich feathers, and the heavy decline in the maize export. The diamond export alone shows an advance of, roughly, £3,000,000 in value, or 36 per cent.—a consequence of the forestalling of the American tariff changes. There has been a very much larger product of inferior stones, and the average price obtained per carat has fallen from £2 5s. to £2 2s. The maize export has dwindled away from £440,000 to £45,000, a purely temporary set-back, no doubt. The gold export shows for the three months an almost negligible decrease, but the year's figures will probably create a new record. The chief exports may be conveniently summarised in tabular form:—

Eleven Months' Exports.	1913.	1912.
Gold	£34,866,150	£34,989,923
Diamonds	11,353,587	8,328,791
Copper	426,395	343,095
Coal	1,271,312	1,086,620
Tin	333,824	227,171
Wool	4,587,267	3,892,625
Ostrich Feathers ...	2,684,574	2,406,216
Hides and Skins ...	1,852,468	1,509,638
Mohair	847,926	896,294
Maize and other Cornstuffs ...	119,208	558,681
Whale Oil	114,173	135,415
Blasting Compounds	287,860	265,325

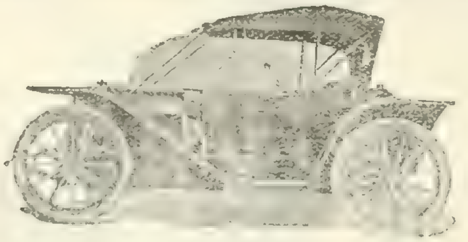
The marked development in the coal export is a feature on which the country may look with genuine satisfaction. As to the imports, the November returns show no specially new features. The progress of fencing in South Africa—a sure sign of progress in farming—is indicated by the heavy increase in the importation of fencing material, and another welcome sign of agricultural progress is the extended use of manures and fertilisers, as revealed in the import returns. Largely increased imports of wood and timber suggest a considerable development in the building trade. For the rest, the most notable point is the continued heavy increase in the introduction of motor cars and motor cycles, the value imported in the eleven months being practically double that of 1912, while the value of mineral oil (other than paraffin) imported was £211,000, as against £90,000 in the previous period.

New Patents.

596. Josephus Davey. Improvements in and relating to dust allayers for use with rock drills and the like.
597. Harold Stockman.—Improvements in apparatus for concentrating ore and the like.
598. George Henry Frederick Bazier.—An automatic relief valve as applied to leaves used in the vacuum filtration of gold ore slimes.
599. Cruffydd Vaughan Trevor.—Hose clamp for drilling wet up or down holes.
600. Henry Marrs.—An invention to catch and confine the dust which results from dry rock drilling or boring in mines and other places.
601. Frederick Burnette.—The transportable bunker or mickbox.
602. John Ernest Roux Adendorff.- Improvements in or relating to fuse lighters, torches and the like.

INVESTORS' DIARY.

Jan. 23.—Witbank Colliery.
March 31. Cassel Coal Co.



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Notes and News.

The Crisis and the "V.F.P." During the recent crisis the mines have worked without interruption through shortage of coal or inability of the Victoria Falls and Transvaal Power Company's stations to keep the pumps and batteries working. This was a possible or probable result of industrial organisation which was much feared, and it is greatly to the credit of the railway authorities that coal should be handled and despatched so expeditiously during a very trying period. Major the Hon. W. L. Bagot, the General Manager of the Victoria Falls and Transvaal Power Company, shows how sensible the Power Company are of this fact in a letter which has been published in the Daily Press, in which he pays the S.A.R management a high tribute.

* * * *

Rand Stocks as Attractive Investments. In a letter addressed to the daily Press during the week Mr. R. W. Schumacher, under the heading of "Miners' Interests in the Mines," counsels mine workers to invest in shares of the mines where they are themselves working, or which they know to be in a strong position." He further remarks: "This is being done to some extent to-day, but I quite agree that it would be advantageous if such investments were placed on a larger scale. Of course conditions vary, but I personally do not know of any investments that are more attractive at the present moment than some of the mines on these fields." Mr. Schumacher's view should certainly be taken to heart. As director of the leading Mining House of the Witwatersrand he is in a position to know, and to know accurately, of the conditions and prospects of the mines under the control of the Central Mining and Investment Corporation. The Rand has been decried for some time past, and the two strikes that have taken place during the past seven months have certainly not enhanced the reputation of the Main Reef series. But at the same time it should be recognised that the Rand distributed more in dividends in respect of the 1913 operations than in respect of those of 1912, despite the very troublous times of the latter half of the year. The stability of the mines, their vast stores of profitable ore, and their magnificent equipments, remain unimpaired. In the recent crisis stocks have fallen—some have fallen greatly—and the "canny" man should now ask himself whether pessimism has not gone too far. In the opinion of many the admirable manner in which the Government has defeated the forces of Labour anarchy will rehabilitate South Africa in the eyes of the world. We believe that the day is not far distant when European capital will again flow towards these shares. The "canny" man will not then regret the purchases of Rand stocks that can to-day be made at bargain prices.

* * * *

Rhodesia's Gold Output. As was anticipated some months ago, the gold output of Southern Rhodesia for last year constitutes a substantial increase on the preceding twelve months. The gold output for December has been declared at 60,554 ozs. of a value of £254,687, as compared with 56,831 ozs. of the value of £239,036 for the preceding month, an increase of 3,723 ozs. of the value of £15,651. The output for last year was 689,954 ozs. of the value of £2,903,268, as against 642,807 ozs., or £2,707,367 in 1912, an increase of 47,147 ozs. of the value of £195,901. With the entry of the Cam and Motor and Shamva into the productive list a further increase during the current twelve months may certainly be anticipated. The gold output of the country, for the first time in its history, should rise to over three million pounds sterling.

The Falcon Plant.

At the annual meeting of the Minerals Separation, Limited, held in London the other day, the Chairman remarked of the Falcon Company's plant: "As you have been informed, the Falcon Mines of Rhodesia are sending out a 500 to 600 ton per day mineral separation flotation plant to treat their copper gold ores. The plant was built for them to our designs by Messrs. Fraser and Chalmers, of Erith, London, who, as you are probably aware, have hitherto built their special plants and apparatus for Messrs. Elmore's or the Ore Concentration Company (1905), Limited. We have arranged to send out one of our own experienced engineers to supervise the erection and starting operations of same and to study actual conditions on the spot. I see no reason why complete success should not be obtained, provided the ore in the mine is of the same character as the samples sent to and tested by us in London; and, of course, that suitable working conditions are maintained and directions observed. Time will not allow me to refer in detail to other licences granted and smaller plants mentioned in the directors' report, which have been and are being erected; nor would it be expedient to say anything at present about the very important negotiations in progress, not only with prospective licensees, but also in respect to the extension of business to new fields. As regards the appeal to the Privy Council by the Ore Concentration Company (1905), Limited, and another versus the Sulphide Corporation, Limited, I have nothing to add to what has been stated in the directors' report, except perhaps to regret the loss of time and the extra expense it will involve, but I think that as a full consideration of the special circumstances of the case must have disclosed sufficient reason why the Lord Chancellor and the Board of the Privy Council decided to have it re-argued, we can only accept the position and await the result in due course. The new hearing has been fixed to commence in the Privy Council on January 27th next. As stated in the directors' report, research and experimental work has resulted in some far-reaching improvements, for which patents have been applied. Apart from differential flotation and mechanical improvements of plant, new and cheaper reagents and methods of operation have been discovered which, among other benefits, entirely do away with the necessity to use any mineral of other acids; in fact, the use of acid therewith is actually harmful in many cases, especially in the treatment of copper ores. The importance of carefully directed and persistent research work cannot therefore be over-estimated, and it has been and will be carried on without intermission, both on practical and purely scientific lines, because results in the past have more than justified the considerable expense incurred; besides, we are fully alive to the fact that many able brains, the wide world over, are busily engaged on the problem of bettering or improving our flotation processes, and that as a natural consequence calls for much careful consideration, exact knowledge, and diligent watchfulness on our part, to protect your interests against possible infringements." Mr. F. L. Gibbs seconded the motion, which was carried unanimously. The Chairman next moved the re-election of the retiring directors—Mr. J. H. Curle and Mr. H. A. Krohn. Dr. Seth Gregory seconded the resolution, and it was unanimously agred to. On the motion of Mr. V. Trubshawe, seconded by Mr. H. F. K. Picard, the auditors, Messrs. Monkhouse, Stoneham and Co., were re-appointed for the ensuing year at a fee of 50 guineas.

* * * *

Uitkyk Collieries, Limited.

At the fourth annual general meeting of the Uitkyk Collieries, Limited, held on Monday, December 22nd, at Salisbury House, London Wall, Captain A. St. John Cooke, D.S.O. (chairman of the company), presided. The Chairman, who moved the adoption of the report, said that the year under review had been a very active one, and they were now, as a result of work done, getting into a very satisfactory position. Contracts had been entered into for sales ahead for a number of years, particulars of which, in the company's interests, it would not be expedient for him to disclose. During the last few months the company had sold all the coal which had been produced. The demand had been great; in fact, during this particular month of December they could have sold 20,000 tons with ease had it been available. Unfortunately in mining accidents often happened, and the particular accident which occurred to their smaller plant caused the haulage capacity at the incline shaft to be reduced, by order of the Inspector of Mines, until such time as the company has either increased the size of that shaft, or sunk a vertical shaft for operation in conjunction with the smaller plant. These matters were having attention. Their large up-to-date hauling and screening plant at the main vertical shaft was in working order, but, owing to the position of the mud-pocket referred to in the report, they had been prevented, largely owing to shortage of labour, from making use of the development already completed from the incline shaft, until they had worked round the wash-out and connected up with the old development. This had prevented their sales to date being as large as they otherwise would have been. Their new water scheme for boilers and domestic purposes was in full working order, and, after continually drawing on it during the worst part of a very dry season, they had a standing reserve supply of some 60,000 gallons. The underground difficulties which the general manager and his staff had had to contend with had been considerable, but with the installation of the large compressor plant, which was working most satisfactorily, and the improved ventilation underground, these difficulties had been removed. One of the particular features of the surface plant had been the erection of coal bins; one bin with a capacity of 1,500 tons had already been erected and was in use. The second coal bin, to contain 2,000 tons, was now being put in hand. In conjunction with these bins arrangements were being made for secondary screening whilst loading from the bins into the trucks, so that any broken coal which might have been produced in the process of storage would be again sorted out and only high quality screened coal disposed of.

* * * *

Trade Union Methods Elsewhere.

A work just published, under the title, "What's Wrong with Unionism?" by Mr. J. T. Packer, General Secretary of the Liberal Workers Institute of Victoria, shows how Syndicalist minorities and their nominees are misdirecting the labour movement in Australia. "There is," says Mr. Packer, "a great tendency in present day Australian Unionism utterly to disregard the advice of the veteran. In the early days of Unionism men joined in large numbers because they believed in it. Now many join because they are afraid of it. . . . The new school of thought in Unionistic circles is of a decidedly revolutionary, Socialistic and Syndicalistic character." And again: "Trade Unionism in Australia is over-organised: there are too many men living on it and by it. Such men, better known as the 'Union agitators' or 'walking delegates,' find it necessary in their own selfish interests to create trouble and discord. They manufacture some make-believe cause for complaint among the rank and file of the heavily-taxed and levied Union members. Thus, in the flare and blare of industrial trouble and war, they have the appearance of earning their money. . . . The decent men pay their dues, stay away from the meetings, and let the agitators wield the entire political and industrial influence of the organisation." Hence such upheavals as the Brisbane strike, or the Sydney railway strike, or the New Zealand waterside workers' strike. The Labour Minister of Works in New South Wales said at the conclusion of the railway strike at Sydney: "We can no longer logically propose the nationalisation of industries as a cure for industrial trouble." The same Minister said: "If the Unions are everlastingly kicking at the people, the people will kick back at the Unions." The Australian labour Press is quite candid in propagating the doctrine that Unionism cannot progress unless there is perpetual discord. The "Labour Daily" of Ballarat wrote on January 30th, 1913: "The Union that can't and won't keep on fighting should disband." The official organ of Australian Unionism, the Sydney "Worker," wrote in January, 1913: "Don't be surprised if 1913 presents us with one of the greatest strikes on record. Labour must not only be prepared to strike, but to back up the strike with armed force—go in for civil war in fact." In short, the position in Australia, as summed up by Mr. Packer, is as follows: "The cause of industrial unrest at the present time is not that the conditions under which men labour are injurious or harmful: it is not that wages generally are low or hours of labour are long, but it can be attributed more or less to the harmful influence of the class hatred policy of the Syndicalist and man of revolutionary methods." Writing of the recent strike in the Dominion, the Christchurch "Press" observes: "The most lamentable feature of the present industrial crisis is the fact that there is absolutely no reason for it, except that a number of irresponsible and interested agitators have found ready to hand the materials for a class war, which they have been ready to fan into flame. None of the men who have gone out on strike—with the single exception of the Wellington shipwrights—allege any grievances against the employers in the matter of pay or conditions of work. . . . But for many years past a sedulous attempt has been made by so-called labour leaders, for their own party ends, to stir up class bitterness." The New Zealand Federation of Labour put the following into the preamble of its constitution last year: "The working class and the employing class have nothing in common. . . . Between these two classes a struggle must go on, until the workers of the world organise as a class, take possession of the earth and the machinery of production, and abolish the wage system."

* * * *

Artificial Diamonds.

A claim for the production of diamonds by electrolysis of calcium carbide is made by E. du Boismenu, of Paris, in a pamphlet on the "*Fabrication Synthétiqque du Diamant*," according to *Engineering*, August 15, 1913. Francis P. Mann describes the experiments which were made in 1908, and which he did not witness, in *Metallurgical and Chemical Engineering*, June, 1913; Mann did see some of the diamonds which the well-known Paris chemists, Lacroix and Maquenne, are supposed to have pronounced to be pure carbon. As stated, the experiments took place in and before 1908, with rather primitive apparatus and insufficient means; the process is said to be covered by the French patent No. 4566, of 1907, and the experiments do not appear to have been resumed. The furnace was fitted with two horizontal electrodes, which were carbon rods approaching one another within 24 cm. It was charged with calcium carbide, fused by the continuous currents applied. At the end of a run of twelve hours —the apparatus did not permit a further continuation of the experiment—the carbide was found to be "enriched" with fine crystals near the anode. In the space between the two electrodes the carbide was left undecomposed. The cathode, however, was surrounded by a black mass, from which some flakes of graphite and also some colourless, mostly quite irregular, crystals or globules were isolated, which consisted of pure carbon. When the furnace had been run for six hours, the length of these crystals was 1.5 mm.; the length increased with longer runs, and crystals of 2.7 mm. were obtained by the run of twelve hours; the rate of growth was generally 0.2 mm. per hour. Mann points out that the crystals certainly did not look as if they had been produced by breaking up natural diamonds. It is hardly advisable to express an opinion. Yet one would rather expect to find the carbon near the anode, and the metallic calcium to travel to the cathode; it is stated that rose-coloured vapours of burning calcium (and carbon monoxide) escaped, and that the cathode was enriched near the anode by carbon migrating in that direction. Du Boismenu refers, of course, to Moissan. It is very doubtful, however, whether Moissan's good crystals of so-called diamonds were really carbon; he did not try to burn the few fairly large crystals he obtained in oxygen, and other workers have acknowledged that they were, in similar researches, deceived by small crystals of silicon carbide and alumina (corundum), both of which are nearly as hard as diamonds. Moissan burned only some small crystals.

As the Witwatersrand and other areas of the country are still under Martial Law, we again refrain from commenting on controversial aspects of the crisis through which South Africa has passed.

TOPICS OF THE WEEK.

THE ACCIDENT PREVENTION CAMPAIGN.

A week ago we ventured the remark that already the "Safety First" movement was bearing fruit; statistics, at any rate, seem to justify this view. It may be alleged, and with reason, that it is as yet too early to indulge in any very definite statements or statistics as to the effect of the campaign that has been instituted by the mining houses of the Witwatersrand in the interests of life and limb. But at the same time it can be asserted that a good deal has already been achieved in the direction of sowing the seeds of caution from which results must spring. The first work necessary is the instilling of the alphabetical principles of safety into as many workers as possible. This can only be achieved by organisation on a large scale, and the Rand may well take an object lesson from America—the country of big ideas—in the matter of nationalising a campaign against the foes of ignorance and laxity. "Safety First" is now a national slogan in America, and amongst the most effective of the various forward movements to produce this result has been the active and organized support given by the manufacturers' associations. The campaign inaugurated some four or five years ago by the National Association of Manufacturers through a special committee, headed by F. C. Schwedtman and James A. Emery, was a wonderful piece of pioneer work, and placed before the employers of the country the first nationally organized campaign in behalf of accident prevention and relief. Through their efforts, the movement has advanced in various states and through state and national trade associations, to such an extent that safety has become a standing topic for discussion. To reach this condition in so short a time is little short of marvellous. It testifies particularly to the human interest that is involved in the question, but finds its rapid incubation through association contact, rather than through the individual development. The problem before the National Council for Industrial Safety is to consider how this mass of influence may be best capitalized or federated to the end that there may be national standards evolved for all forms of protection and stimulation in co-operative measures. Much work is being duplicated. Much valuable information is lying dormant that is needed by the public. Much enthusiasm is being smothered that only awaits release through association influence. In the state associations there are perhaps a total of over 30,000 members, some of these being duplicated in national, state or regional trade associations, which also represents a large membership. Nor does this include transportation, public service corporations, and a vast array of employers who do not operate machinery, but who do employ large forces at work, as in jobbing houses, retail stores, public institutions, etc. Nevertheless, the influence of the manufacturer extends more or less directly to all other lines of business. To standardize the forms of protection and relief, and provide efficient means of promulgation throughout the country should be one of the cardinal undertakings of the National Council for Industrial Safety. Many of the states have active communities working under the direction of the state associations, or through the associations of certain trades, many of them maintaining inspection departments for the benefit of their members. Writes a well-known American authority on the subject in a technical journal:—"We do not say that all may be good or that some may be bad, but we do say that much benefit will arise by pooling ideas—standardizing methods, eliminating the fanciful and getting right down to the common sense of the thing. That safeguarding may be carried too far cannot be gainsaid. We are prone to over-enthusiasm on subjects of such intense interest. Safety must not be automatic; that is to say, the individual must not be led to the belief that there is nothing to fear—that he is to have no responsibility for self-consideration. Through association influences the progress made in the various trades in the way of providing and handling safety devices, may be made available to all employers, as in nearly all establishments there are certain forms of exposure that are incident to all, such as electricity, elevators, steam uses, passage-ways, etc. What shall be the standard of protection for all of these conditions? This council should be a clearing house on the subject. Through its propaganda there may result national or regional museums of safety and work hygiene; this would certainly be well within the possibilities of the near future if we may succeed in enlisting the active interest of all associations. The National Association of Manufacturers is doing a splendid work, as are leading institutions like the United States Steel Corporation, Westinghouse, General Electric, etc., for which due credit should be given, but in my humble opinion it falls short of covering the needs of the manufacturers of the United States as a class, who for trade reasons, may confine their organization interests to their own trades, or, in state associations where mutual co-operation forms a larger percentage of the annual dues than money." What has been done in America can surely be achieved on the Rand if only employers and employees will co-operate loyally together. Might we suggest as a New Year resolution for the Rand: "Resolved that the accident rate of 1914 shall be at least 10 per cent. below that of 1913"?

THE NEW ERA IN RHODESIA.

Elsewhere in this issue we refer to an important ceremony which has just recently taken place in Southern Rhodesia—the official starting up of the Cam and Motor mill. This is the most important mine that has been brought to the full productive stage in the country for some years past, and the commencement of milling operations there may be said to mark the beginning of a new era in the Hartley district, which hitherto has been essentially a "small man's" mining field. A feature of interest in connection with the Cam and Motor is that the plant is designed on the lines of Kalgurli practice, and that in a number of ways it will mark a new departure from the usual Rhodesian methods. The mine starts milling under very favourable auspices. No charge of premature crushing can be laid against the door of the company. The producing period starts with ore reserves estimated at 1,016,240 tons of an average assay value of 46s. per ton, and from reports received the directors have no fear that all the labour necessary for the mine will not be available. The company should soon be working up to its crushing capacity of 15,000 tons per month, and over and above this there will doubtless be further extension in the not far distant future. It is expected too that the Shamva Company at Abercorn will have a trial crushing of its new mill this month. The event will be a further landmark in the history of Rhodesian mining, as the Shamva will operate what is easily the largest milling installation ever erected in Charterland, and results will be awaited with keen interest. The directors' report on operations at the Shamva Mine for the quarter ended the 30th September last stated the ore reserves to be as follows: Total tonnage previously developed, 2,327,582 tons, value 5 dwts.; total tonnage developed during quarter, 78,214, value 5.26 dwts.; total ore reserves on hand to date, 2,405,796, value 5.01 dwts. Broken ore on surface, 188,559 tons; estimated value, 4.13 dwts. The Shamva, it may be recalled, has an equipment of about 50,000 tons per month capacity. These two mines will thus be contributing to the gold output of Charterland as from the early part of the current year, and that their returns will greatly increase the production of that country cannot be doubted. Since 1910 the mining industry of Southern Rhodesia has been very much in the doldrums, and it may well be that the advent of the two important companies mentioned above into the productive list will lend a fresh stimulus to mining in the territories of the Chartered Company.

THE INDUSTRIAL SITUATION.

Rapid Convalescence of Industry—Conditions Normal Again—The Position at the Time of Going to Press.

The position on the mines of the Witwatersrand is now practically normal again. Announcement by the "acting executive of the Federation of Trades" that the strike is "declared off" marks the close of a brief but hopeless struggle between the forces of the Government supported by the community at large and the forces of Labour. The Federation's dictum has had the effect of causing a large number of employees to return to their work with clear consciences that they have done their duty by their Unions. On the Rand the mining industry has emerged from the recent industrial crisis without serious injury and is now in a state of lively convalescence that renders the issue of further daily industrial bulletins unnecessary. Reports from one end of the Reef to the other emphasise the rapid resumption of activity in all departments. A return to the pre-strike scale of productive operations is only a matter of days. All along the East Rand the rush of men to sign on at the mines continues. There has been no difficulty in filling places, and it is to be feared that many men will be out of work. Large numbers of miners unable to find employment are leaving the Benoni district. The Permit Office has issued close on 200 permits to go to England, Australia, Rhodesia and other countries outside the Union. The departure of so many men may have a serious effect on trade locally. Work on the Further East Rand mines is nearly normal, and the position to-day is that there are far more applicants than there are places for. At the Premier diamond mine the strike has made havoc in the ranks of the employees. About 430 men went out, leaving about 70 of the staff, mainly foremen and officemen, to run the mine. This has entailed a severe strain on the loyal employees, who have worked almost continuously night and day. The ordinary scale of operations, it is understood, has not, however, been reduced; the natives have been continuously employed, and the mine has suffered no loss. A curious feature of the strike at the Premier is that, although the great majority of the men are non-unionists, and admittedly had no grievance, they answered the call to strike as readily as those who pay tribute to the Trades Hall. So complete was the abstention from work, it is stated, that only one fitter and four electricians remained at their posts. All the men who struck have been discharged and paid off. The single men were given 48 hours' notice to vacate their rooms. The married employees are allowed to retain possession of their cottages till the end of the month. Every train brings out a party of discharged employees to look for work on the Rand and elsewhere. A number of the men hope to obtain employment at Kimberley. On Tuesday, thirty men are said to have left the property to seek their fortunes in Australia. As the old hands pass out, a steady stream of new men is pouring into the property to take up the employment which the strikers have forfeited.

As to the Railways, the Minister of Railways and Harbours issued the following notice on Thursday:—"Railway Strike: Further notice is hereby given that the terms of my notice, dated 10 p.m., on January 16, 1914, will only apply to such late employees of the South African Railways and Harbours as shall have offered themselves for further re-employment before noon to-morrow, Friday, 23rd instant, and whose services may be accepted for further employment. Any late employees who shall not have made application in terms of the said notice before noon, Friday, 23rd inst., will be treated as having retired from the Service under the terms of Section 47 of Act 28 of 1912."

In the outlying gold and base metal fields of the Transvaal the strike has had no adverse effect. As to Johannesburg the Martial Law regulations have been relaxed somewhat and the town is practically its normal self again. This, we think, summarises the position at the time of going to press.

THE NATIVE LABOUR SITUATION.

Excellent Conduct of Mine "Boys" During the Crisis—The Questions of Repatriation and "Tropicals."

A FACT—and a most important fact—that emerges from the crisis of the past fortnight has been the tranquility of mine compounds. Officials of the Native Affairs Department, of the labour recruiting organisations, compound managers and assistant compound managers have had an exceedingly anxious and busy time, but by means of constant watching and the exercise of great tact the difficulties of the position have been kept under control. Great praise is undoubtedly due to the officials mentioned above for the manner in which they have handled the situation, and great praise is also certainly due to the natives themselves whose conduct throughout the whole of this trying period has been exemplary. The possibility of anything approaching a native rising has throughout the present crisis been remote, so firmly has the Government acted and so well has the situation been kept in hand. But for all that the dangers with which such a remote possibility is fraught are so alarming that this aspect of the upheaval has been perpetually kept in mind by the authorities.

What Repatriation Would Have Meant.

Of almost equal seriousness has been the much greater likelihood of the natives being repatriated. Had the strike assumed large proportions, such a course would have been inevitable. The prospect of a long chain of idle mines with over 150,000 natives caged up in compounds with food supplies running short and the whole Reef in a state of chaos is a sufficiently alarming prospect to justify the most drastic measures conceivable in regard to ensuring the safety of the country from any dire circumstances which would certainly attend the getting out of hand of the huge native labour army of the Witwatersrand. Ever since the troubles of last July plans have been in complete readiness for sending home the boys to their homes in charge of officials of the various Native Departments of the public and mining companies' services, accompanied by detachments of the Defence Force. There would have been one long march to Ressano Garcia, where the East Coast boys would have been handed over to the Portuguese authorities. Another huge army would have been despatched to the Cape Colony, another to the Northern Transvaal, and so on. All arrangements for repatriation were complete. Depots had been arranged, and had the position demanded it the whole machinery of the organisation would have been set in motion and the Rand would have been depleted of its industrial life-blood—the coloured workers. To safely conduct to their homes such a vast aggregate of natives would have been no easy task, but whatever the difficulties it is certain they would have been much less than those attending the restoration of this labour force to the Rand. As one gentleman who knows the native mind well aptly remarked: "You can send the boys home alright but you will have the very greatest difficulty in ever getting them all back again." Every thinking man in the country must know what the repatriation of the Rand's native labour would mean to the community. After the disturbances of July last the Government prohibited recruiting, and only at the end of the year did the position begin to be regained. Had all the natives been repatriated during the present crisis it would take at the very least twelve months before the Rand could be working at anything approaching a normal rate of production. It is unnecessary to dilate on the consequences. Ruin for the whole community was hanging over the country like a sword of Damocles, and it is a matter for the most hearty and all-round congratulation that the extreme step had not to be taken. In so far as the native labour force of the Rand is concerned the present crisis has been practically without effect. It is, too, highly satisfactory to learn that there are reasons for hoping for an augmentation of the force at an early date. At this time of the year natives come forward more readily than at other seasons, and the drought will no doubt have some influence on the position and induce more natives to come forward for work in the mines.

The Question of "Tropicals."

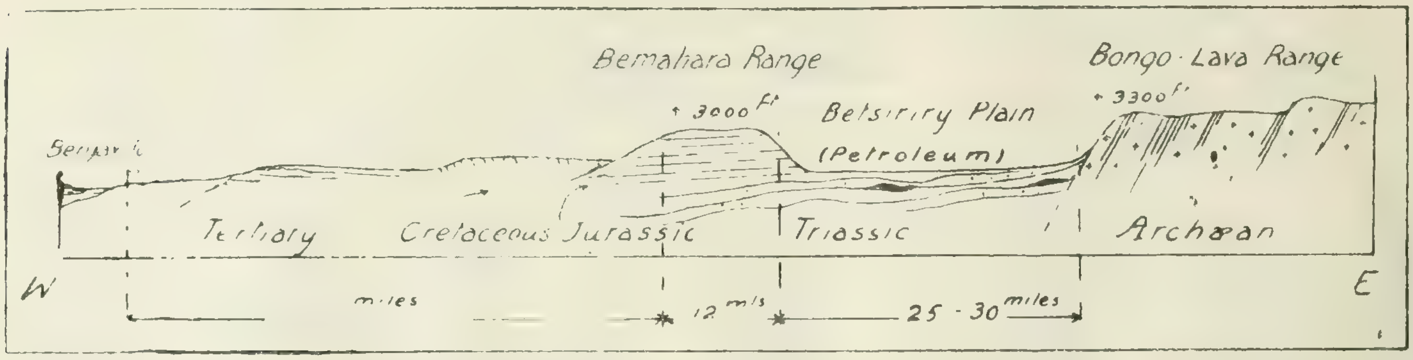
Perhaps, too, in the near future augmentation of the labour force from "Tropical areas" may be expected. It will be recollected that some little time ago further recruiting in "Tropical areas" was banned by the Government on account of the alleged high death rates prevailing amongst natives of this class. Recently, however, a Commission has been enquiring into the question of whether pneumonia is not prevalent amongst natives in the areas in which they are recruited. Should it be established that the disease is common amongst natives in certain of these "Tropical areas" it is quite on the cards that there will be relaxation of prohibitive regulations in certain of the northern areas of Portuguese East Africa, which would, of course, be of very material benefit to the Rand.

AFRICAN GRAPHITE.

THERE have not recently been any whole-hearted efforts to exploit the graphite occurrences of this country, but it is known that graphite occurs in numerous localities of South and South Central Africa. In Portuguese Angonia and Mid-Western Nyasaland occurrences of graphite have been worked in a desultory way for some little time past, but of late there appears to have been very little effort in this direction. Graphite has, too, been found in Natal. It may not be general knowledge that graphite occurs in Madagascar. A report by the Governor-General of Madagascar states that numerous deposits of graphite have been discovered on the island during the past three years, namely, in the districts of Tananarivo, Manjakandriana, Vatomandry, Andovoranto, Maevatanana, Betafa, Antsirabo, Ambositra, Fianarantsoa, Fort Carnot, and Ambalavao. The line of outcrop extends along nearly the whole island from Ambre to Fort Dauphin, and nearly 400 claims have been located. The graphite is disseminated in the form of scales interstratified in gneiss, and seems to replace mica. Close to the graphite outcrops and parallel thereto is an extensive intrusion of white quartz, traversing the beds of gneiss, and apparently having some definite connection with the graphite, the two being associated in all cases. The graphite deposits form masses attaining a thickness of 20-30 yards, the net thickness of graphite being about 1-2 yards, and they consist of weathered gneiss from which the graphite can be easily separated by hand washing, by which means it can be concentrated to 80 per cent. or 85 per cent. The scaly crystals of graphite have a greasy feel. The output in Madagascar in 1911 amounted to over 1,500 tons, and this will probably be doubled in the present year. Works are already being constructed to treat the graphite, some of them (Ouberbie) employing electric fans for classifying the product, whilst others (Soc. Franco-Belge, Syndicat Lyonnais, Lonys Frères, and Cabrol & Cie.) using water as the classifying agent. Railway communication already exists between Tananarivo and Brickaville, and an extension to Tamatave on the one side and Antsirabe on the other would afford a powerful stimulus to the graphite industry.

THE MADAGASCAR PETROLEUM FIELD.

Brief Geological Description—The Petroliferous Triassic Belt—Importance of Favourable Rock Structure.



Geological Section Across West Coast of Madagascar.

Among the more recent discoveries of petroleum which have been made in various parts of the world those of the neighbouring island of Madagascar appear to be distinctly promising. As is fairly generally known Mons. D. Levat, the French engineer who was engaged to make an exhaustive examination upon the mineral resources of the island, and whose conclusions are embodied in his report to the Minister for the Colonies and to the Governor of Madagascar, spoke highly of the prospects of the territory as a field for profitable mining operations, and particularly as a possible producer of mineral oil. In view of the wide interest which is being taken in the work of South African syndicates in that island, the following notes gathered from the pages of "Richesses Minérales de Madagascar," as Mons. Levat's report is entitled, will doubtless prove acceptable to a great many of our readers.

The Geological Conditions.

In order to make things clear we may refer at once to the accompanying section, taken with a few unimportant omissions, from the report. It gives a general idea of the structure across the western portion of the island, near its centre, from the Bongo Lava highlands to the sea. The range alluded to is comprised of a series of archæan rocks which mark an important line of fracture that runs along nearly the whole western side of Madagascar. A similar line of fracture runs along the eastern coast, and has contributed largely to the shaping of its outline. A difference between the two is that the one on the west is somewhat sinuous in outline, while that on the east is notably rectilinear. As is indicated upon the section, the Bongo-Lava range rises to a height of about 3,300 feet above the level of the sea. Westwards, along the foot of the range, runs the sandy, marshy plain of Betsiriry, hemmed in again upon its western edge by the somewhat lower range of the Bemahara. The geological structure of this country, as will be seen, is quite simple. In contact with the archæan rocks of the Bongo-Lava, upon whose flanks they rest unconformably, lie the Triassic sandstones, in which the petroleum seepages and bituminous occurrences are found, along a line which runs for many miles in a northerly and southerly direction. Above them come the calcareous rocks of the Jurassic system, followed by Cretaceous and Tertiary rocks allied to those which cover such large areas on the eastern side of the South African continent. The latter circumstance has led to the belief that, although a deep sea channel now exists between Madagascar and the mainland to the west, in earlier geological times there was in all probability a connecting area over which strata similar to those of the western Madagascar coastal area were simultaneously deposited. The importance of this possibility, from an economic point of view, is not to be lost sight of, although a difficulty in the way of carrying the argument very far is the fact that the petroliferous strata of Madagascar are asserted to be distinctly Triassic, whereas the recent rocks of eastern South Africa are apparently not older than the Cretaceous age, and therefore considerably higher in the geological horizon.

Extent of Petroliferous Indications.

According to Mons. Levat, petroliferous indications, of greater or less importance, are found for many miles along the narrow belt of Triassic rocks which runs in a continuous line for hundreds of miles along the western side of the island of Madagascar. From Malaimbandy to Mevatanana, for instance, a distance of, say, 300 miles, Triassic rocks with oily characteristics may be traced almost uninterruptedly. Since the occurrence of payable petroleum fields can only be looked for, however, where the geological structure is favourable—a point that is dwelt upon at some length in Mr. Cunningham Craig's little book upon "Oil Finding"—it is not to be expected that anything like the whole of this belt will turn out to be of economic value. Mons. Levat has made it clear in his report that a considerable amount of fruitless expenditure has been incurred owing to operations having been carried on at points where the structure was obviously unpromising. Anticlinals of a marked kind, extending over fairly wide areas have been already located at one place or another, and doubtless more will be mapped from time to time. It is upon these that attention should be concentrated, and, as far as we are aware, this is a policy that is being followed as much as possible by those companies that are now engaged upon exploratory work upon the petroliferous belt.

CORRESPONDENCE AND DISCUSSION.

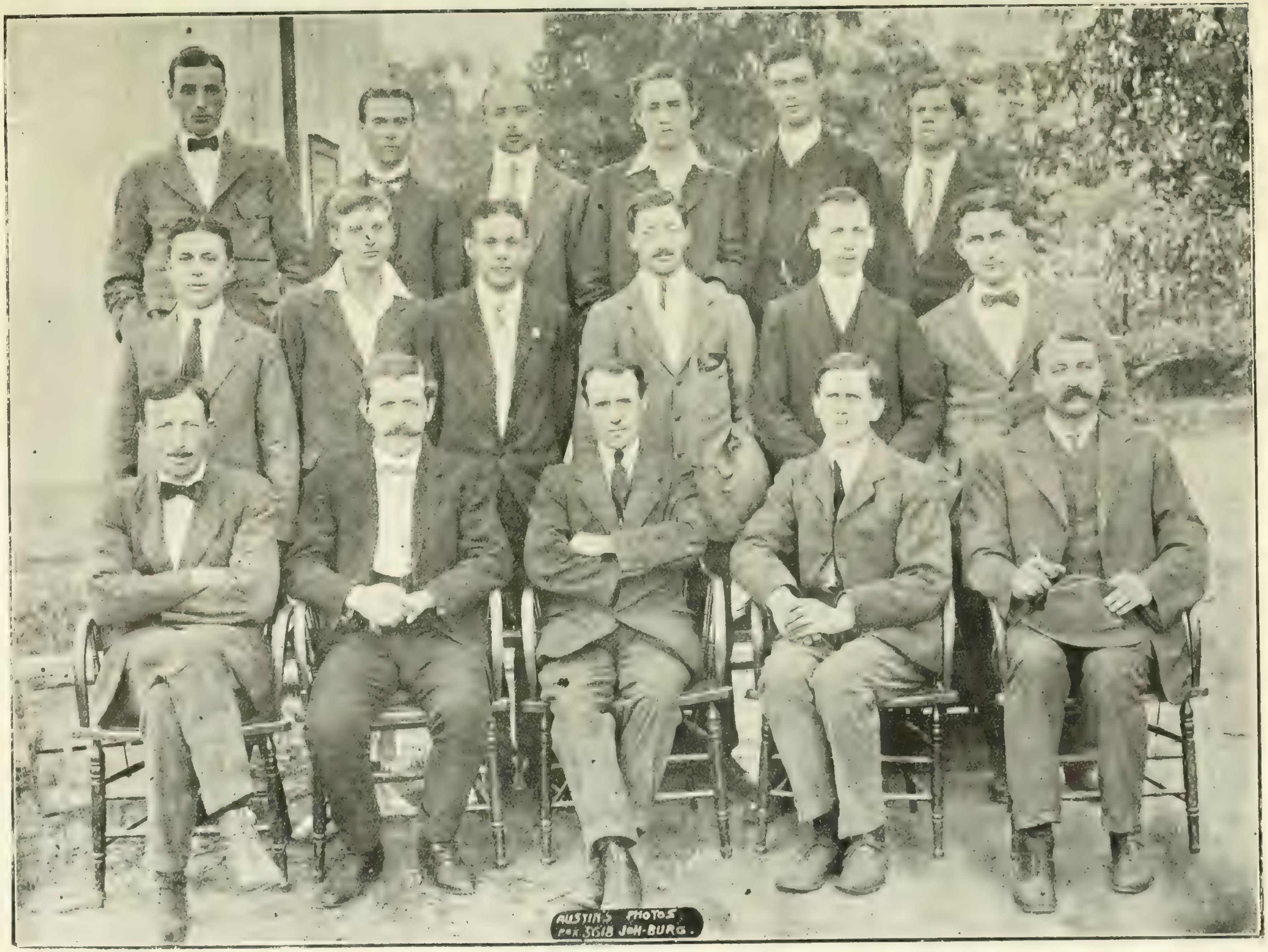
National Diamonds.

To the Editor, *South African Mining Journal.*

Sir,—I quite agree with the views expressed in your issue of the 17th inst. with regard to the affairs of the National Diamond Syndicate. I trust the directors will act upon the suggestion that a rather more frank attitude may wisely, as well as justly, be adopted towards shareholders, and not least towards those whose close investigations into the past records of the company have not tended to inspire abounding hopefulness. There is, I presume, no desire to embarrass the directors as long as they carry on with a reasonable amount of regard for the interests of those who have little or no control over their financial operations. There is, at the same time, no doubt whatever that the fullest account will be demanded, and obtained, of those acts which may result from the new and extensive powers which are being conferred upon the board. The knowledge that the fierce light of intelligent and determined scrutiny will always beat upon these financiers will doubtless encourage them in the straight path they have marked out for themselves.—I am, etc.,

INVESTIGATOR.

VICTORIA FALLS AND TRANSVAAL POWER STATION STAFF, BRAKPAN.



Top Row (left to right): W. O. Smyth, junior switch attendant; C. S. Robinson, timekeeper; J. Waterson, junior switch attendant; A. B. Collins, junior switch attendant; W. G. Carey, assistant district engineer (Distribution); E. Lindenberg, stores clerk.

Second Row: I. W. Lewis, senior switch attendant; W. R. Ruxton, junior switch attendant; D. Thackeray, junior switch attendant; C. Hopkins, assistant district engineer (distribution); G. P. Grey; R. H. Clarke, senior switch attendant.

Bottom Row: L. Anderson, district engineer (distribution); T. H. A. Brown, station electrician; N. L. Watt, engineer-in charge; B. T. Ohlsen, shift engineer; W. E. Letty, compound manager, storekeeper, etc., etc.

MOTOR TRUCKS IN METAL MINING.

Applications of Motor Vehicles to Mining and Metallurgical Plants.

DURING the past few years there has been remarkable extension of railway building enterprise in the Union of South Africa and Rhodesia, and with it there has, of course, been a corresponding opening up of mineral wealth in many districts. There are, however, still a number of areas which are more or less crippled on account of lack of transport facilities, and to such districts the problem of transportation is of the very greatest importance. An article appearing in the *Engineering Magazine*, entitled "Motor Trucks in Metal Mining Industries," by Rollin W. Hutchinson, Jr., should be read, marked, and learned by all those interested in outlying mining areas where transport is a difficulty. In the course of his interesting contribution, Mr. Hutchinson writes:—The transportation charges that must be met by mining companies, particularly metal-mining companies, have been generally one of the most expensive drawbacks to the profitable development of mineral deposits. The carrying of materials to the mine and the haulage of the ore from the mine to the smelters has presented difficulties that have taxed the ingenuity of the most expert transportation engineers. Traction engines of both steam and gasolene power, and our faithful friend the mule, have been relied upon with some degree of success, but more often complete failure. Traction engines have failed in seven cases out of ten because of the ruggedness or "sandiness" of the country incident to the majority of mining working, the difficulty of supplying water to the steam-driven type, and the relative slowness of this kind of self-propelled vehicle. Nature has so located vast deposits of valuable minerals that the difficulties of transportation have served as a deterrent to the exploitation of these potential resources of nature. Transportation difficulties of the mining industry cannot be solved in every case by the use of motor trucks. The same things that militate against traction engines may prevent the successful utilization of trucks. Motor trucks require reasonably good roads (since they also possess considerable weight) for their most satisfactory and economical operation; and the mechanical design in a truck that will be highly efficient on the paved street at 500 feet altitude may be a total failure on the arroyos of Arizona at sea level or the passes of New Mexico at 8,000 feet above sea level. Manufacturers who have attempted to foist their standard model trucks on the mining men can blame no one but themselves for the bad repute with which the motor truck in general was recently held in the Far West. Happily for the manufacturer, as well as the mining industry, the inglorious failures of the earlier installations have developed an intelligent understanding of the widely different operative conditions under which the merchants' and the miners' transportation work is done, and modifications of construction by the relatively few manufacturers that are attempting to sell trucks to the mining field have been made which have resulted in successful installations that have no parallel in any other kind of commercial transportation. The utilization of motor trucks in any mining transportation problem calls for the exercise of the same judicious selection as was outlined in a previous article. There are in addition questions of adaptability and suitability of trucks for these peculiar transportation conditions which demand the combined study of the mining company's engineers as well as the transportation engineers of the manufacturer. The motor truck, *per se*, is not a solution of a haulage problem in the mining business any more than it is in the meat business. The work must be work that a motor truck fits into, and the size of units must be properly adjusted to the weight of material, the length of haul and the good or bad conditions of unloading which exist or which can be modified to adapt the motor to the mining man's needs. Thus if the haul is one of 50 miles and the mineral is very heavy material like copper ore, it would not pay to use two 3-ton units whose operating cost in sections where gasoline is climbing to the 50-cent mark would be far greater than one 6-ton unit, even considering the great advantages of flexibility gained by division of carrying capacity, the ability to have one unit of the transportation system "on the job" in case of breakdown, etc. Again, a mining company should be most careful to compare the specifications of the trucks it invests in with the specifications of the same manufacturer's product for urban use. The motor truck which is to be used in the Salton Sea region or on the arid plains needs at least 50 per cent. more radiating capacity in its motor-cooling system than is commonly employed. And if it is to be used in hot, arid sections with deep sands, steel wheels should be demanded which should not only be of wider tread but also of larger diameter than the standard model. If grades of 15 to 25 per cent. are common, the motor truck for mining use should be provided with a special oiling system to keep every frictional part of its prime motor adequately lubricated. Motor capacity for the heavy pulls of deep sands, the gumbo mud of the mountains, or the semi-quicksands of the streams, should be larger than some makes of trucks are provided with; but as a general rule inadequate systems of lubrication rather than inadequate power is the primary cause of failure in the power plant. Most American trucks are over- rather than under-powered, and great power for transportation that at the best must be done at slow speeds is a hindrance rather than a help. Big powered motors have a big appetite for gasoline, and in mining regions the scarcity and price of gasoline demand the use of a truck of the highest possible efficiency—and a driver who knows how to get the most mileage out of a gallon of fuel. However, the fuel item (even though gasoline were twice as dear as it is) is of the smallest consideration in mining work where the motor has sometimes reduced the transportation cost from $15 to less than $5 per ton as compared with mules. Chain drive is preferable to shaft, worm or internal spur-gear drive, as this kind of drive is less liable to injury from rough roads, avalanches of small boulders, trees in the trail, etc. Soaked in kerosene and then in tallow, their wear is slight and when so treated at intervals they pick up little sand, even in the deserts. Grit and sand, however, are insidious enemies to the life of a truck operated in arid regions. Only the most careful protection of motor and transmission will obviate expensive frictional wear in running parts. Four years ago there were two motor trucks in the two big metal-mining States of Arizona and Nevada. To-day practically three-quarters of all the principal mining companies in all the important mining States west of the Mississippi River are using one or more. A few have as many as eight or ten trucks. Important mining contractors go so far as to admit to the author that they would not think of bidding on a mining-development contract without at least making their transportation estimates based on the use of auto-trucks. The 20-mule ore team, the slow and lumbering steam tractor, the burro with his bulging sacks and his glassy, famished eye, are rapidly being relegated to the limbo of forgotten things. The auto-truck is proving to the mining man that although it cannot go where "the sure-footed burro needs tire-chains to keep from skidding," its traction versatility is adequate to cope with the mountain, the plain or the desert—wherever any other wheeled vehicle can go, provided road clearance enough for its axles and a "bottom" to the trails of gumbo mud or quicksand can be had, and desert sands that would bury the machine above its hubs do not interpose. Even the extremes of altitude and temperature which were predicted by the sceptics a bare half-dozen years since as the "locymotion that 'ud sho' put them gasoline waggins locoed" has veritably served only, as one enthusiastic and formerly much sceptical old miner aptly expresses it, to prove that "them motor waggins eats the mountings and deserts as 'ef they wuz made like 'Frisco's fine avenoos." When one realizes that distances are magnificent in the Far West's mining companies' transportation work, and that all in the day's journey of carrying supplies from the mountain railway town 7,000 feet above sea level to the mining camps across the desert valley thousands of feet lower down, the motor truck may and does, all in a day's journey, experience vicissitudes of temperature ranging from 32 degrees to 110 degrees in the shade, and of altitudes from 7,000 to sea level—he must admit that for flexibility of application, and transportation versatility this new transportation tool must be accorded first place of all mechanical, “ railless ” transportation agencies. To see a 6 ton mining motor truck climb the 20 per cent. grades on the “ hairpin ” passes common in the Rocky Mountain States, take the down-grade on the opposite side over a trail so narrow that two inches of one of its big outside tyres has nothing under it but the air of a canon hundreds of feet deep—to observe it extricate itself from the gumbo mud of a plateau leaving a trail behind it like four units of a big tractor plough—to note that in the desert sands when the canteen water is at the temperature of our bath back home on a frosty morning, its motor is but a trifle hotter to the touch than when we examined it in the morning when the frost crystals shone on its wind shield—these chroniclings in the log-book of the engineer or student who goes to the mining districts of the Far West to-day to study reasons for the motor-truck's steady growing popularity among metal miners will enable him to read his own answer. It has proven itself equal to any transportation problem the miner has put upon it that could within reason be put upon any vehicle of transportation having wheels. Faith nor hope had the mining engineer, a slender number of years back, in the motor truck. By the grace of charity, it is recorded in mining motor-truck lore, the power wagon got its start in the Arizona ore country. The not too well authenticated story goes that a venturesome tenderfoot of San Francisco who had saved little of earthly goods in the great earthquake and fire of April, 1906, save a fairly good (for that early day) motor truck, in his eagerness to escape the recurrence of another such terror conceived the idea of making the journey overland in it to Denver to start his fortunes afresh. He got as far as the copper-mining district when a boulder smashed the rear axle and the tenderfoot lost heart. Tramping to a mining camp he made such an emotional display of his months of hard luck that the mine superintendent was touched to the extent of allowing himself (as he then imagined) to be “ touched ” for $500 in exchange for the dislocated machine. After welding the break with thermit, the superintendent (to the accompaniment of jeers of his men) put the motor to work carrying ore to the smelters. Finding that the mule teams would not as his men predicted, “ have to be all the time pullin' the horseless contraption back,” and that the machine was doing as much as the best two of his four-mule teams, he became so enthusiastic that he undertook to make the president and the officials “ way back on lower Broadway ” also “ see the light.” These men naturally thought that any one who dreamed of motor transportation in that unbroken, wild country was surely “ locoed.” At any rate, it was not until after the panic of 1907 had been dispelled that these officials would invest in two auto-trucks, and, even then, neither they nor the Eastern salesmen who had never been west of the Mississippi River, realized the special features that were required in them for operation in mining service. The trucks failed. The officials back East derided the superintendent for his folly and he after a year spent in retorting that he “ wanted trucks built to his requirements,” finally secured an appropriation for two more which he came East and selected himself. These trucks soon became the talk of the miners for five hundred miles around. The superintendent's judgment was vindicated; and whether this story is fiction or fact, that particular company now owns ten fine auto-trucks and probably will own ten more in a year, while every other mine within 200 miles of it also uses motor trucks. The indirect advantages of the motor truck in mining service are as great as, if not greater than, those it has brought about in intra- or inter-city use. It is proving itself an immense benefit to the undeveloped (in other industries) mining States of the Far West, through the good roads influence radiating from every point where the new vehicles are in use. Road improvement increases motor transportation. Unlike the passenger auto, which demands good roads from a comfort standpoint and for speed, the motor truck coming on to country roads demands good roads as a matter of dollars and cents, which means only that in those sections where long-distance hauling is common (as is found in the mining States) these good roads will have the first opportunity to develop and to attract agriculture and manufacturing. Thus the successful use that is being made of motor trucks for mining work will in a few years bring about their utilization in other fields of transportation peculiar to the section.

NIGERIA OR RHODESIA?

A Curious Blunder.

In a recent issue our old and valued contemporary, *The Mining Journal*, of London, has made a bad geographical blunder. The paper in question in its issue of November 29th had the following article:—

> A paper was read by Lieutenant-Colonel A. St. Hill Gibbons before the Royal Colonial Institute on Monday last dealing with the recent history and present position in Northern Nigeria. After describing the exploration and the gradual development in the knowledge of the territory, he proceeded to describe the natural character of the country and its mineral and agricultural resources. In the main he described it as a planting country. The mining industry was in its infancy; there existed gold, copper, silver, zinc, lead, iron, coal and first-class limestone, though only copper, coal and lime were being seriously worked. However, the country has been barely scratched by the prospector, and its real mineral wealth was largely a matter of speculation at present. In dealing with the policy recently pursued by the Chartered Company, the lecturer approved what had been done up to four years ago, but suggested that since then the new policy had been introduced, which was having mischievous results. . . . The price of township land had also been greatly raised, £500 per stand being asked, as against £40 in the early days of Southern Rhodesia, and £290 in Elizabethville, the capital of Katanga Territory, while sites were selling recently in Nairobi at £70 an acre. The labour problem was equally urgent; the reason for the shortage of labour was that an official labour bureau had been established with the professed object of taking away to Southern Rhodesia every able-bodied native who desired to work. In short, though the closing of the country had not been officially proclaimed, settlement had in fact been brought to a standstill. The present white population was 2,019, including 261 officials, 378 women and 423 children. In conclusion, the lecturer suggested that the logical development of administration for the district would be the creation of a British Central African Government, including the Crown Colony of Nyassaland, and the development of communication with Europe through the Lobito Bay Railway, which would bring the capital within twelve days of English ports.

The paragraph in question affords yet another instance of the amazing ignorance of people in England in regard to Africa and particularly in regard to African geography. Lt.-Col. Gibbons was, of course, speaking of Northern Rhodesia, which, we need hardly state, is a mightily different proposition to Northern Nigeria.

A PLUCKY ENGINE DRIVER.

The Vogelstruis Bomb Outrage—Mr. Brown's Splendid Conduct.

In the annals of industrial heroism it would be difficult to find an instance of greater bravery and more superb presence of mind than the act of an engine driver at the Vogelstruis Estates Gold Mine at Roodepoort. About 11.40 on Sunday night a bomb or dynamite cartridge with lighted fuse attached was thrown through a back window into the engine-room of the No. 2 shaft. The engine driver on duty, Mr. George Brown, a very old servant of the company, thought at first the substance which fell on the footplate was a rat, but the smell of burning fuse brought him to a realisation of his danger. With great presence of mind he applied the brakes and stopped the skip which was being sent down the shaft at the time, and just managed to get outside the door when an explosion occurred. The explosive did no damage beyond denting an iron plate on which it rested. Fortunately, the only person in the skip, a skipman, also escaped without injury. Finding the skip pulled up with unusual suddenness, he stepped out on to the ladder-way and climbed to the surface. At a meeting of the local directors of the company, held in Johannesburg on Monday, it was resolved to send Mr. Brown, the engine driver, a cheque for £50 and a letter of cordial appreciation of his pluck and presence of mind, which saved the life of a fellow-workman and averted the temporary dislocation of the hauling gear. The directors resolved also to offer, through the Police authorities, a reward of £500 to any person or persons who will give information leading to the arrest and conviction of the author of the outrage. Mr. Brown's conduct should qualify him for the honour of the King Edward's medal—the Victoria Cross of the mining world. Acting on the instructions of the board the manager of the company has now ordered all men remaining on strike to quit the houses and rooms which they occupy on the property. It may be mentioned that in its long and somewhat chequered career this low-grade property has distributed no less than a million sterling in wages, as against a paltry total of £30,000 distributed in dividends to shareholders.

RAND WATER BOARD.

Situation Again Causing Anxiety—Position at Zwartkopjes.

The continued drought is not only causing grave anxiety to farmers in many districts of the Transvaal—in every district in fact, with the exception of the Eastern Transvaal—but it is also becoming a serious matter on the Rand. The position in regard to water supply in Johannesburg and elsewhere between Randfontein and Geduld is in fact causing considerable anxiety. This, we understand, is due in large measure at any rate to the fact that the quantity from Zwartkopjes, one of the chief sources of supply of the Rand Water Board, has decreased by nearly one-half since the end of November. The situation is partly explained by the Chief Engineer in a report which was placed before the Board yesterday afternoon. Since his statement was drawn up, however, the state of affairs has, it is said, grown appreciably worse, and Zwartkopjes would seem to be giving out in a way that is distinctly unsatisfactory. To quote first the figures given by Mr. Ingham, it may be said that on November 30 last the ten boreholes at Zwartkopjes yielded 4·39 million gallons. By December 27 this quantity had sunk to 3·13 million gallons, and by January 7 to 2·47 million gallons. Thus in a period of a calendar month and a week, the output decreased by nearly two million gallons a day. Since the last date there has been no rain except for a few storms which have been of little or no value so far as the replenishment of the boreholes is concerned. The results is that to-day the yield from Zwartkopjes is only 2¼ million gallons a day. This is the lowest figure on record, and represents a fall of 4 million gallons since August 19, 1911, when the maximum quantity of 6¼ million gallons was obtained. The effect of this diminution is naturally serious. Thus, while on November 30 the quantity of potable water available for distribution from all the Board's sources of supply was 11·54 million gallons, after allowing 5 per cent. for wastage, the total on January 7 was 9·98 millions. To-day the quantity is roughly 9½ million gallons. When these figures are compared with those showing the demand, it will be found that for the month of December the daily average of potable water sold was 10,350,544 gallons, which is also a record in the history of the Board. Including non-potable water, the daily average was 10,564,221 gallons. The non-potable water comes from the Cinderella, and on January 7 amounted to 300,000 gallons.

Kamfersdam Diamonds.

The eighteenth ordinary general meeting of this company was held on December 18, at Winchester House, Mr. William Lawrence Wildy, the chairman of the company, presiding. The Chairman, after referring with satisfaction to the work of the managing director, Mr. H. J. Krauss, said he trusted that the report by him on the work done during the year and on the present position and prospects of the company's property was satisfactory to the shareholders. The work done during the year had been mainly preparatory, preliminary to extracting blue ground in quantity and recovery of diamonds. Any yield they had recovered from washing during the past year might almost be looked upon as a by-product, and not taken as a true indication of the value of the ground, although it was a very useful and hopeful indication thereof. During the current financial year, since June 30 last, the balance of the debentures subscribed for had been called and taken up, so that their issue that day was £25,000. The work done during the past year had consisted principally of removing from the mine the fallen ground. Mixed with this ground had been a considerable quantity of blue ground, which had pulverised more or less completely, and which, on passing over the grizzlies, had been extracted, mixed with a large proportion of crushed reef, and sent to the washing machines. The yield of diamonds had been moderately good, and many fairly large; good stones had been recovered. In July the managing director made a discovery of old sortings or overflow from the pulsators, which had proved to be rich, and many thousands of loads had been washed, and a considerable yield of diamonds recovered. The yield from the first washing of 6,000 loads had given 13 1-3 carats of diamonds per 100 loads of tailings. During the year they had hauled from the mine debris to the amount of about 382,500 loads. They had washed 40,385 loads of mixed pulverised blue and debris, and recovered 3,154 carats of diamonds of the value of £3,170. They had deposited on the floors for pulverisation 13,023 loads of pure blue ground, and 6,848 loads of lumps, or nearly 20,000 loads in all. Since the end of the financial year they had hauled 164,111 loads of the reef, washed 71,323 loads mixed reef and blue, floored 3,938 loads of blue, deposited 10,890 loads of lumps, and recovered 2,550 carats of diamonds of the value of £3,276, a total of 250,262 loads of 16 cubic feet hauled from the mine to November 20. No approximation of the value of the blue ground could be formed from those figures, for they were, and had been, working under very difficult conditions. Very shortly, to all appearances, they would be mining straightforward ground and laying down a large reserve of blue ground on the floors.

Mr. C. F. Parry, manager of the Sub Nigel, has just returned from a nine months' visit to England and resumed his duties.

Rhodesian Section.

LATEST MINING NEWS.

Important Event at the Cam and Motor—The Planet-Arcturus—Globe and Phoenix Dividends—Rhodesia Broken Hill—Katanga Coal—A Belingwe Discovery.

In the presence of a large gathering of Government officials, principal citizens and chief representatives of the Rhodesian mining industry, the ore reduction works of the Cam and Motor Mine were formally declared open on Saturday, 17th inst., by Mr. F. J. Newton, in the unavoidable absence of the Administrator. The plant, which cost close upon £200,000, is designed to treat 15,000 tons per month, and introduces for the first time in Rhodesia the West Australian all-roasting process of ore treatment of the most modern type. The event marks an epoch in the history of Rhodesian mining, and is accepted as evidence of faith in the future, inasmuch as it is felt that upon the success of the Cam and Motor property largely depends the future supply of capital for new ventures. In asking Mr. Newton to declare the works open, Mr. Julius Weil (chairman of the company) traced the history of the claims from their original pegging in 1890 by Dr. (now Sir) Starr Jameson; their abandonment in 1904; subsequent repegging, and final acquisition by the present company. The ore reserves in the mine so far developed amounted to over a million tons, of the value of over £2,250,000, which gives the property an assured life of many years. He hoped that the patience of the shareholders would soon be rewarded by good dividends. Dealing with the outlook of the mining industry as a whole, he understood that the various properties expected to commence production in 1914 had developed ore reserves aggregating upwards of 5½ million tons, worth about £10,000,000, and the plants of these new mines would have a combined capacity of nearly 120,000 tons per month. Therefore the Rhodesian gold output for 1914 should show a very large increase as against the year just closed. In conclusion, Mr. Weil referred to the valuable services of the mine manager, Mr. John McDermott, and staff, and especially the way in which the erection of the huge plant had been pushed forward. In declaring the works open, Mr. Newton heartily congratulated the company on its enterprise. Mr. Wilson Fox, in the course of an interesting speech, expressed himself very optimistic regarding the future of the mining industry, and foreshadowed a reduction in railway rates, but warned the Rhodesian mines to look more to internal organisation for a reduction of working costs. Mr. McDermott, the manager, said that the mine had been considerably under-estimated, and in his opinion had not been adequately exploited in the lower levels. It was only when the lode became completely stripped between the walls, in order to commence stoping operations, that one realised what a wonderful mine the Cam and Motor was. Development at the bottom level showed the lode to be stronger, and improving in values as the drives extended south.

* * * *

The following is a copy of cable despatched from the local to the London office of the Planet-Arcturus Gold Mines, Ltd., on the 9th inst.:—"Slate Mine No. 5 level east drive from 415 ft. to 437 ft., average assay value 11 dwts. over 49 ins., full width of reef not exposed, face looks well. Winze No. 3 E.D. now connected with No. 5 level, average assay value 12 dwts. over 50 ins., full width not exposed."

* * * *

In accordance with the policy announced at the recent meeting of shareholders, the board of directors of the Globe and Phoenix Gold Mining Company have decided, though there is no diminution in the returns of the mine, to reduce the interim dividend to one shilling, in order to provide for capital expenditure and a cash reserve. Note: A rumour current a few days ago in Bulawayo was to the effect that, at the 2,500 ft. level, the reef had been cut assaying 5 ozs. over a width of no less than 10 ft.

* * * *

Presiding in mail week at the general meeting of the Rhodesia Broken Hill Development Company, Lieutenant-Colonel C. H. Villiers stated that it had not been considered advisable to incur any expenditure on the mines during the year except what was necessary to keep the principal workings in repair. Serious attention, however, had continued to be given to the question of ore treatment, and the services of Messrs. Hooper, Speak & Co., consulting engineers, had been requisitioned for the purpose of superintending the tests and advising the board generally upon the results. Those gentlemen now advised that the results as regarded the lead values of the ore were satisfactory, and that the company would be justified in erecting at the mine a preliminary plant to treat 50 tons of ore per day. They were only dealing with the lead values of the ore; and the residues from which the lead values had been extracted would remain over for future treatment of the zinc contents. The time, he added, must come when many parts of Northern and Southern Rhodesia would attract a much larger white population than they did to-day, and when townships would spring up and agricultural and other industries would be developed. Railway communication and cheaper transport would do more to hasten that development than anything else. Mr. Zenner strongly criticised the conduct of the company's affairs so far by the directors. Mr. Speak, addressing the meeting, and in answer to a question, stated that the cost of the concentration plant, erected, would amount to £14,000 or £15,000.

* * * *

The *Géomines* publishes the report made by Mr. P. Fourmarier, a mining engineer, sent by it to the Katanga, on the discovery of coal near the exit of the Lukuga River from Lake Tanganyika. The report confirms that made by the engineer Xhignesse. There are five beds of coal, somewhat inclined, of a combined thickness of 5 metres, and over a length of 20 kilometres, and separated by spaces less than 10 metres in depth. The coal is of good fuel quality. Up to now, coal to make coke has not been discovered, but the existence of coal to make coke in the same geological level in Rhodesia and Natal justifies the hope that it will be found. The coal-beds are close to the Congo-Tanganyika Railway line. It is difficult to estimate the cost of producing a ton of coal, but as the working is extremely easy, an appreciable profit per ton is looked for. Next spring the Géomines hopes to supply coal to the Congo-Tanganyika Railway, and as soon as the new mining law is promulgated, a subsidiary company to work the coal mines will be formed. In a lecture at Liége, on Monday night, on the Lukuga coalfields, Mr. Xhignesse stated that the railways and steamers of the region would require 50,000 tons of coal per year.

* * * *

During the year ended June 30, 1913, the London and Rhodesian Mining Company made a net profit of £43,515, against £32,713 for the previous year, and adding the amount brought forward from 1912 there was an available profit of £84,906. Out of this the directors have transferred £75,000 to the reserve account, which now stands at £100,000, and carry forward a balance of £9,906. At June

30 the company had share investments £313,393, of which £197,006 was represented by investments having a market value of £259,843, and debtors and cash—subject to £25,515 for contingent liabilities—showed a surplus of £50,000 over liabilities.

* * * *

A correspondent of the *Rhodesia Mining Review* writes from Belingwe: " Mr. Challen, who recently erected a small mill to treat rubble in a block of claims known as the ' New Insimbi,' after some three months' output decided to cease work and remove the battery to some more promising centre. Dismantling commenced, when unfortunately Mr. Challen severely scalded himself with exhaust steam. The natives, with no one to guide their work, proceeded down the shaft and commenced drilling. Challen subsequently heard a blast and one of the natives shortly brought him a ' piece of iron ' that had turned up. One glance was enough for Challen. In spite of his injuries he made haste to descend and found that the natives had drilled through a slab of gold some 18 inches long, which had unfortunately broken away into several pieces. One is over 20 ozs. and two 15 ozs. each, the total weighing just over 69 ozs. There is no sign of quartz or water wear, and the gold was found in a seam of clay 50 feet from the surface.

S.W. Transvaal Diamond Diggings.

The detailed returns of diamonds found during the month of December in the South-Western Transvaal are to hand from 41 different areas, and the total is £1,500 lower than that of November, while not since June, 1911, has the monthly total been of such small proportions. The various contributors to last month's total are as follows:—

	Carats.	Value.
Bloemhof	914⅞	£2,670 12 6
Kameelkuil	295¼	1,355 0 0
London	328¾	1,186 17 6
Rietput	213¾	896 0 0
Eastleigh	210⅜	677 7 6
Dievedraai	193½	626 15 0
Panfontein .	194¾	538 8 6
Maroetjesfontein ...	67½	527 10 0
Kareepan 164 . . .	67	312 0 0
Avondster	69½	267 7 6
Eerstebegin	79½	252 10 0
Koppiesvlei	66¾	245 7 6
Kromellenboog	45	244 12 6
Diamantdoorns ..	43	205 0 0
Schweizer-Reneke	35⅛	151 0 0
Zwartlaagte	28	128 5 0
Christiana	19¾	117 5 0
Johannesrust	11¾	75 10 0
Goedgenoeg	14¼	54 0 0
Rondevlei & Doornbult	16	55 0 0
Vechtvallei	17¼	51 10 0
Cawoods Hope	13	40 2 6
Mooifontein	20¾	38 15 0
Zoutpansdrift	7¾	34 10 0
Klipplaat	4¼	34 0 0
Biesjeslaagte . . .	9½	32 15 0
Jala Jala	13	30 2 6
Modderkraal . .	7	25 0 0
Mamusa	2½	19 0 0
Vuurfontein	5½	16 10 0
Kuilfontein	7	12 0 0
Zevenfontein . . .	6	9 0 0
Matlabansstad	2½	8 0 0
Zoetfontein .. .	2	5 0 0
Vaalpoort	1½	3 10 0
Leeuwboschfontein ...	3	3 10 0
Wolmaransstad Town Lands	¾	3 0 0
Vanzylsdrift . ..	1½	2 10 0
Kareepan 137 ..	2	2 0 0
Weltevreden . .	½	1 10 0
	3,031⅛	£10,961 13 6

Sakalava Madagascar Proprietary Oil Fields.

This company has received a cable from the representative in Madagascar stating: " Communication oil fields interrupted very bad weather "; which explains the reason of no news coming through.

Reversing the Air Current.

In the course of Part II. of the Report on Mines and Quarries for 1912, Mr. R. A. S. Redmayne (H.M. Chief Inspector of Mines) makes the following remarks regarding arrangements for reversing the air current at mines to which Section 31 (3) of the Coal Mines Act applies. At a number of mines compliance with the Act has been secured by altering the fan casing, so that the fan, while continuing to revolve in the same direction, will draw in fresh air at the centre and eject it from the periphery over the casing into the upcast and so act as a forcing instead of an exhausting fan; but in many cases extensive structural alterations have had to be made, and in others entirely new fans have had to be erected. Many collieries, especially in Scotland and in South Wales, had not completed—some had not even commenced—the work necessary for compliance with the Act in this respect by the date named (January 1, 1913). In the majority of these cases either the necessary work would take longer than the time allowed, or the management could not obtain delivery of the fans from the makers. There is no doubt that the effect of the six weeks national strike of miners delayed matters considerably at the collieries, and, owing to the heavy demand on the engineering works the makers have been unable to meet orders. In cases where it could be clearly shown that real difficulties existed in the way of complying with the Act within the time named, the Divisional Inspectors have met the owners in a reasonable spirit and granted an extension of time wherein to comply. In nearly every case the means provided for reversing the air current have been a fan or fans. In a very few cases a waterfall in the shafts has been found to be adequate. In some cases, notably in the smaller mines of the Southern Division, steam jets have been placed in the upcast shaft, and when the Divisional Inspector has been satisfied by experiment that the apparatus was efficient, he has allowed its use. I would like in this connection, as cases have come to my knowledge, in which the management of the colliery appear to have been in doubt as to what the Act actually requires, to say that the means to be provided must fulfil these conditions:—(a) They must be capable of being put into operation immediately; (b) they must be such as will allow of the reversal of the air current in the roadways of the mine as well as in the shafts; (c) they must be adequate for the purpose, that is to say, they must be such as will allow of the reversal of the current taking place within a reasonable time. It has sometimes been suggested that the reversal of the air current would tend to dislodge the fine coal dust accumulated in the roadways of the mine, and carry it towards the shaft, but Mr. Johnstone (H.M.I.M.) remarks that he has " made careful inquiries about this, and in no case had the alteration of the direction of the air had the slightest effect on the dust." This statement is based on the results of many experiments with the reversal of the air current at collieries in his Division.

ANSWERS TO CORRESPONDENTS.

G. N. 91.—(1) Has good prospects. (2) We have little faith in this concern under present auspices. We discredit both the rumours referred to in your letter.

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Engineering Notes and News.

Enterprise at Holman's.

Holman Bros., Ltd., of Camborne, Cornwall, is a household word in South African engineering circles, and it is of much interest to learn that during the past year the great Cornish engineering works has witnessed marked progress. In order to cope with the foreign demand for electric hoists, Holman Bros., Ltd., have standardised patterns from the very smallest up to 300 h.p., and are receiving orders for them from South Africa, South America, India, China, and Russia. The rock-drill department is receiving great additions, which are now reaching completion. When in running order this will more than double their capacity of twelve months. For the last three years this section has had to work by night as well as day. At the No. 1, or main works, very large alterations are in hand, as the whole of the old portion, some of it dating back to 1839, is being torn down, and a very fine modern shop, which will have few rivals, if any, in the West of England, is being built over the site. This big alteration must necessarily take time, as everything is being done to ensure the smooth running of the works while the change over is being made, consequently it has to be done in sections. Perhaps, however, the most interesting feature of all in connection with this firm is that which has taken place at the Cornwall Boiler Company's Works, in which Messrs. Holman Bros. are largely interested; here a very modern and complete drop forging plant has been installed, capable of stamping out forgings in quantities, and doing the same in minutes which by the old method took hours. This is an entirely new industry, and one which has formerly been kept chiefly to the Midlands.

Preservation of Boreholes.

Recent events have served to remind mining engineers of the advisability of preserving all boreholes put down for prospecting and other purposes, says the *Iron and Coal Trades Review*. Hitherto most boreholes have been lost through the mining companies or others not being prepared to purchase the contractor's tubing put into the holes; the tubes have been withdrawn by the contractor on completion of boring operations, with the result that the boreholes collapse and are lost. In many cases a probable valuable asset has been thus thrown away for the paltry cost of the tubes —an item of, say, anything from £10 to £100, according to the diameter and depth of the borehole. A remarkable instance of a preserved borehole being the means of saving life has been experienced in the recent mishap at Egremont, Cumberland, England, where two men employed by the Townhead Mining Co., Ltd., were imprisoned in the workings of one of that firm's mines through an inrush of water completely cutting off exit by the shaft. The men knew of a borehole to the east of the shaft; they made their way to it, and soon got into communication with the officials at the surface, who had also gone to the borehole, some 150 yards from the shaft, and were able to converse with the imprisoned men. Arrangements were immediately made to send down through the borehole thermos flasks containing hot drinks, food, etc., to say nothing of other comforts in the shape of candles, a watch and such woollen clothes and wraps as could be safely put down a borehole 5 in. in diameter. The borehole was also used for pumping air down to the men. The men were imprisoned 5½ days before the shaft was unwatered and they could be brought to the surface, and the borehole was the means of considerably allaying the fears of the management, to say nothing of the anxious relatives and friends of the entombed men. Stimulated by this notable example, mining companies and others ought in the future to seriously consider the desirability of preserving all boreholes, even if at the time of boring their use as a means of life saving, etc., may appear remote. Cases have been known where boreholes only partially tubed have remained good for 20 years or more. Apart from their use as a means of saving life, boreholes can be and are being used for water supplies and ventilating purposes; and as holes can be bored of a diameter large enough for a man to be lowered up and down, mining companies may consider making such provision where a second exit by shaft or other means does not exist. Moreover, a borehole of such large diameter might have other uses; it could be utilized for the lowering of all timber required in the workings, a work of magnitude in some metalliferous mines which takes up much valuable time at the drawing shaft. Such a borehole could also be used for conducting electric cables to the workings, thus removing the danger of their presence in the shaft, with the further possibility of reducing the length of cable required. The question will, no doubt, be seriously considered in the future.

To Protect Iron.

According to the *Bulletin de la Societe d' Encouragement pour l'Industrie Nationale* for July, the Brest Military Engineering Department has drawn attention to the satisfactory results obtained with coal tar and quick lime as a protective coating for iron exposed to saline air. The mixture, made in the proportions of one part of quick lime to two parts of coal tar, is heated to boiling point in a cast iron pan and triturated while boiling. The paint is applied hot —40 to 50 degrees C. with a brush fitted to a handle so that greater pressure can be employed, and consequently a thinner coat of paint given. In this case the paint takes at most two days to dry in warm weather, or with a rather strong wind; but it should never be applied in rainy weather. The weight to use is about two hundred grammes—three thousand grains—per square metre; and the cost including labour is one franc seven cents. per coat. It is applied to new iron over a coat of red lead. In the case of old oxidised iron, the metal must be first scraped and coated with red lead. The first experiment, at the end of 1911, was made on a metal door. After a year there was no trace of oxidation; whereas ordinary paint only resists the action of saline air for about six months. Subsequently numerous applications of the mixture were made on different kinds of ironwork.

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Motorists and Effective Road-Making.

Colonel R. E. B. Crompton, in a paper read at the Institution of Mechanical Engineers, shows that great saving would accrue to motorists if roads were made on a satisfactory system, without affecting the cost of making such roads. In order to bring into comparison the data which are obtainable from the old type of roads with those obtainable from re-constructed roads, in the preparation of his statment he had adopted the following assumptions: (1) That we take the case of a mile of road carrying a traffic of 1,000 tons per day, or 360,000 tons per annum. (2) That it is assumed that, of this traffic, two-thirds will be in the form of pleasure vehicles or light commercial vans weighing from 1 ton up to 2½ tons, or averaging 1·75 tons each, and that the one-third balance is in the form of 24,000 heavier vehicles between 2½ and 7½ tons, averaging 5 tons. (3) It is assumed that the damage done to roads by a ton of traffic carried on steel tyres is one and a half times that carried on rubber tyres. (4) That the cost per vehicle mile for the lighter class, the bulk of which use pneumatic tyres, may be taken at 8·25d., and that of the heavy five-ton vehicle be taken at 16d., both of which are well-ascertained average figures. (5) That the cost of the roads as they are is the common case where a main road 18 ft. wide requires re-coating every three and a half years, at a cost of £800 per mile, or £228 per annum, which, with the annual cost of trimming and share of lengths-man's wages, brings the total cost to £300 per annum The reconstructed road to be re-surfaced with double-coat work, 4 in. thick, at a cost of £3,400 per mile, having a life of 12 years, which, with the item for lengthsman's wages, also comes out at £300 per mile per annum. (6) That the reduced vehicle costs shown are those now obtainable from vehicles running most of their mileage on well-surfaced urban roads, and are due not only to savings in fuel and repairs, but to the greatly increased speed and increased mileage run by each vehicle on the improved roads. The large saving shown, amounting to upwards of £800 per annum to the owners of the vehicles using this mile of road, brings forcibly before the public the case which Colonel Crompton attempted to make—that the time has arrived when this problem of the new industry of road locomotion should be most carefully considered by all classes engaged in it.

TO CONTRIBUTORS.

The Editor invites Contributions on any subject of interest relating to mining and other industries of South and Central Africa, as also of suitable non-copyright photographs or snapshots of mining or engineering interest. Subject to special arrangement, the scale of remuneration for all articles inserted is at the rate of Two Guineas per page, and 5/- for every photograph. No responsibility can be accepted for safe transmission, but anything that may be submitted that is not accepted will be returned if a stamped and directed envelope is enclosed for the purpose.

New Patents.

603. The Knowles Oxygen Co., Ltd., and Robert William Grant.—Improvements relating to the production of hydrogen and oxygen by electrolytic processes.
604. Ester & Company, Ltd., and Arthur Percy Strohmenger.—Improvements in the preparation of metals and alloys.
605. David Corrie and George Alfred Ashcroft.—Improvements in the manufacture of detonators.
606. Edward Clinton Smith.—An improved bottle mouth.
607. Josef Heinrich Reincke.—Improvements in the method of and means for the electric transmission of signals and speech in mines.
608. George James Coles.—Improvements in and relating to automatic couplings for railway and similar vehicles.
609. The Benoni Tshisa Stick Syndicate, Ltd.—An improvement in the means for lighting fuses for use in blasting or for analagous purposes.
610. John Pountney Udal.—Improvements in the manufacture of nitro-glycol.

61˙. James Winstead Owen.—Improvements in style for sound reproducing machines.

612. Armour Hall.—Pipe coupling.
613. Emanuel Rosenburg.—Improvements relating to synchronous dynamo electric machines.
614. Thomas Kemplay Irwin.—Improved apparatus for the aeration and gasification of liquids.
615. Fritz Schwarzer.—A whistle, hooter or like sounding instrument.
616. Frederick Joseph Trump and Frederick Wartenweiler.—Improvements in binding dust and the like in and about mines.
617. Anthony William Richard Schieder, William Spence Wilson and George Innes Smith.—Improvements in apparatus forming receptacles for storing explosives, tools and the like in underground workings of mines or the like.
618. Marconi's Wireless Telegraph Company, Ltd., and Charles Samuel Franklin.—Improvements in aerial conductors for use in wireless telegraphy.
619. John Hall.—Improvements in means for removing air from the feed water passing into steam generators.
620. Charlie Beatson McMullin.—A haulage lashing rake.

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1. William Lippiatt.—Improvements in catches or fastening devices for sliding doors, partitions and the like.
2. James Miners Holman and John Leonard Holman.—Improvements in or relating to ore concentrating tables.
3. Friedrich Carl Wilhelm Timm.—Process of treating materials, especially metalliferous materials, for wasting, reducing, volatilizing, sintering or the like purposes.
4. Naamlooze Vennootschap de Vereenigde Blikfabricke and Cornelis Verwer.—Collapsible metal box, especially for use as sowbox on plantations and in general for transportation in a flat state to remote factories and the like.
5. Ottokar Serpek and Societe Generale des Nitrures.—Process for fixing nitrogen by means of ferro-aluminium or other ferro compounds.
6. August Holste.—Improvements in shirts.
7. John Pountney Udal.—Improvement in the manufacture of glycol di nitrate.
8. Ottokar Serpek and Societe Generale des Nitrures.—Process for the fixation of nitrogen by means of ferro-aluminium or other ferro compounds.

Transvaal G.M. Estates.

The following cable has been despatched to the company's London office:—This company and Glynn's Lydenburg, Ltd., in no way adversely affected by recent general strike.

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(CARTWRIGHT & EATON, LTD.)
Works at DUNSWART, near Benoni.

MANUFACTURERS OF
Round and Bar Iron and Mild Steel and Tapered Bars for Tube Mill Liners.
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ADDRESS ALL ENQUIRIES TO
Managing Director, Union Iron and Steel Works,
22, Central House, Simmonds Street, JOHANNESBURG.
P.O. Box 3921. 'Phone 1924.

Finance, Commerce, and Industries.

Shipments of Cattle to the Union.

A London correspondent writes:—The year now closing has been a record one so far as the exports of livestock to South Africa are concerned. From the figures at present to hand it would appear that during the ten months ending October 31, 474 Shorthorns were shipped to South Africa, as against 129 in 1912, 52 in 1911, 34 in 1910, and 6 in 1909. These figures speak for themselves. As a dual purpose animal the Shorthorn has no equal. It is eminently suited to the climatic and other conditions prevailing in South Africa, and there is little doubt that the demand for the breed will steadily increase. Devons have been in considerable request and South Africa has been the largest buyer of this type of cattle. South Devons have also been in great favour, and during the twelve months ended September 30, no less than 317 were sent to the Union and Rhodesia. Herefords show a steady advance and total 102 for the twelve months ended October 30, while Aberdeen-Angus are making headway and during the year ended September 30 the exports number 44. Sussex have had a record year, 77 having been shipped. This breed grades up well with the native cattle and have given great satisfaction in Rhodesia and other parts of the country where they have been tried. De Beers have been large buyers of Sussex during the last few months. Sir Thomas Smartt was a large buyer of Redpolls at the recent Rendlesham dispersal sale, and it will be interesting to see how these animals acquit themselves in their new home. Ayrshires are being extensively enquired for, and there is no doubt that South African farmers are now beginning to realise the possibilities of this animal as a milk producer. British Holsteins have been sent out in increasing numbers, and a few Jerseys have also gone forward. Sheep and pigs also show a steady advance. The horse trade, too, has been very brisk. The Hackney is steadily advancing in favour and a number of animals well known in the English Show rings have found a new home in South Africa during the past year. The thoroughbred has found a ready market, while Cleveland Bays have been shipped in steadily increasing numbers. Of the heavier types, Clydesdales are undoubtedly the most popular and the exports show a notable advance on the figures of last year. A number of Shires and Suffolks have also been sent out.

* * * *

New Iron Trade Combination.

The English iron trade will have a good time in 1914, at least that branch of it dealing with galvanised iron, if all reports are to be believed, and there seems little reason, happily, to doubt their accuracy. The Galvanised Sheet Iron Association, which played an important part in ministering to the prosperity of the iron trade of mid-England in particular during the five years ending with the early part of 1910, is to be re-formed, and much satisfaction is finding expression at the circumstance. Negotiations with a view to bringing the manufacturing firms together have been going on for some time past, and it is now understood that they have succeeded very satisfactorily. Not all the English iron firms engaged in the galvanising business have been induced to join, but there is good reason for stating that the great majority have given in their names, and this is a matter of the first importance. The recent improvement in trade which has appeared in the English galvanised iron trade, and in Lancashire and the Midlands especially, has been regarded by the manufacturers as a very good opportunity for trying to restore to the industry the palmy days of 1906 and 1907. Ever since the Association was dissolved galvanised sheets have been a sensitive market, and the industry may be said to have suffered by reason of the prosperity that attended it while the Association existed. There has been a large increase in the number of sheet mills throughout the country, and competition amongst home producers has, consequently, been exceptionally keen. Frequently prices have been down to an unremunerative level. Now values have advanced to £11 and £11 5s. f.o.b. Liverpool for the export trade, and to £11 10s. for 24 w.g. sheets for home orders. Some manufacturers, moreover, are said to be so well booked that they are now unable to give deliveries before the end of next February. Further, in some quarters it is suggested that some merchants have placed large contracts in anticipation of advancing prices, which must certainly follow the formation of a new Association to control the market.

* * * *

Natal Wattle Industry.

It is a remarkable fact, and says much for the industry and high intelligence of the farmers of the smallest Province in the Union, that, unaided, they have built up the wattle, the tea, and the sugar industries, have conquered the cattle plague by means of the arsenical dip, and, at the same moment, have fulfilled the prophecy of Joel, the son of Pethuel, and have restored to the people of South Africa "the years that the locust hath eaten" by means of the arsenical spray (says the *Agricultural Journal*). We believe this industry has a great future. The quick growth of the tree, the high percentage of tannin contained, and the low cost of production give the wattle growers of Natal great advantage over growers in other countries. But certain improvements are urgently needed, as follows:—A regular supply of good bark must be assured for the tanneries of Great Britain. (2) That only sound, mature bark is exported and properly graded with a Government certificate. The good name of Natal must never be impugned by bad packing, damaged or adulterated bark. (3) More co-operation is required between the growers themselves and their agents in London and Durban. (4) The wattle industry needs more advertisement in the British markets. For Imperial reasons it does seem lamentable that the Union should allow Germany to control and absorb practically the whole of the output of a British Province. Hear what Mr. W. J. S. Newmarch, of Harden Heights, recently said on this matter:—"As you are aware, the dry bark is put into sacks. These sacks must weigh exactly 198 lb. gross weight. Should any sack weigh over 200 lbs. the Hamburg buyers claim a reduction of 5s. per ton. I had to pay £3 15s. on a recent consignment because a few of my sacks went above 203 lbs. This is an absurd penalty brought about by the monopoly of the Hamburg market." At the present time the wattle market is being manipulated by speculators, both in South Africa and Europe, like the wheat market of America. Nevertheless, Natal is the only country in the world supplying wattle bark on a large scale. Wattle growing has raised the price of land in many parts of Natal, just as if some new township had suddenly sprung into existence. Besides the use of bark for tanning, large quantities of poles are sent from Natal to the Rand mines for pit-props, and firewood to many parts of the Free State. Special low rates are allowed on the railway for both poles and firewood. A new industry has sprung up in box-making. Formerly the raw bark was used in the tan pits. Nowadays the tanner employs tannic acid in the form of a liquid extract from the raw material. It would be well if a wattle extract factory could be erected in Natal, and the profits of the industry kept in the Province. It is estimated that such a factory would cost £50,000. Moreover, it is probable that the present system of packing in sacks will be given up in favour of compressed rectangular packages, thus effecting a great saving in shipping space. In a word, the wattle farmer of the future must be a world farmer. It will be interesting to show the progress of the wattle industry by means of a few figures:—1886, 39 packages, value £11; 1896, 3,378 tons, value £16,450; 1906, 14,820 tons, value £89,443; 1912, 59,103 tons, value £283,010.

Sheba G.M. Co.

The following are the operations of this company for the month of December:—Crushed 5,330 tons, yielding 3,352 ozs.; estimated profit, £4,216.

THE WEEK IN THE SHAREMARKET.

A General Advance on Investment Purchases.

The collapse of the "General Strike" and the return of conditions closely approaching to normal has been signalised in market circles by a disposition to take a cheerful view of affairs. If, as many responsible people imagine, the events of the past few days will tend to rehabilitate South Africa in the eyes of the investing world, the "Great Strike" will not have been in vain. A very large amount of business was transacted on the local Exchange on Thursday, and although during the afternoon the market was not so active, there was still a strong demand for shares. African Farms, Modder Deeps, Van Ryn Deeps and Sub Nigels changed hands in large quantities, and quotations advanced all along the list. The support appeared to come from good local sources, but on receipt of London cables there was a large number of buying orders from there also.

* * * *

	Fri., 16th.	Sat. 17th.	Mon., 19th.	Tues., 20th.	Wed., 21st.	Thurs. 22nd.
Adair-Ushers	—	0 3*	0 3*	0 3*	0 3*	0 3*
African Farms	14 3*	14 3*	14 3*	14 3*	14 6	14 9*
Apex Mines	17 0*	17 0*	17 0*	18 0*	18 6*	19 3
Aurora Wests	—	—	—	7 6*	—	—
Bantjes Consolidated	11 9*	11 3*	12 6*	13 0*	13 0*	13 6*
Benoni Consolidated	1 10*	1 10*	1 10	1 9*	1 9*	2 0
Brakpan Mines	—	45 6*	46 6*	48 6*	48 0	49 3*
Breyten Collieries	25 0*	27 6*	26 3*	26 9*	26 6*	26 6*
Bushveld Tins	0 4*	0 7†	0 5*	0 5	0 5*	0 6*
Cinderella Cons.	3 6*	3 6*	3 6*	3 9*	4 6*	5 0*
Cassel Coals	—	11 6*	11 3*	10 9*	10 6*	10 6*
City and Suburbans	40 6	41 0*	41 0*	41 6*	42 6	42 6
City Deeps	51 6*	52 6*	52 0*	52 6*	53 0*	53 0*
Cloverfield Mines	3 9*	4 3	4 2*	4 7	4 9	5 3
Clydesdale Collieries	—	—	8 0*	—	8 0*	8 0*
Cons. Investment	17 6*	—	—	18 9*	20 0†	19 0*
Cons. Langlaagtes	25 0*	26 3	26 3*	27 3*	27 6*	27 6*
Cons. Main Reefs	16 0*	16 3*	16 3	16 3*	16 3*	17 0
Cons. Mines Selection	—	—	—	—	7 6*	—
Coronation Collieries	—	12 0*	12 3*	12 0*	12 0*	—
Coronation Freeholds	—	0 4*	0 4*	0 4*	0 4*	0 5
Coronation Syndicates	—	3 0*	3 0*	3 0*	3 0*	—
Crown Diamonds	7 9*	7 9	7 6*	7 6*	7 6*	7 6*
Crown Mines	—	—	—	124 0*	—	—
Doornhoek Tins	—	5 0†	5 0†	5 0†	—	—
East Rand Centrals	8 0*	8 0*	8 0*	8 0*	8 0*	8 3*
East Rand Coals	1 9*	1 6*	1 6*	1 7*	1 7*	1 7*
East Rand Deeps	1 3*	1 3*	1 3*	1 5*	1 6*	1 8*
East Rand Props	—	37 6*		39 0*	38 6*	39 6*
East Rand Debentures	—	—	£85		—	£85†
Eastern Gold Mines	1 0*	1 0*	1 0*	1 2*	1 3	1 4*
Frank Smith Diamonds	5 9	6 1	6 0*	6 3	6 3*	6 6
Geduld Props.	20 6*	20 6*	20 6*	22 0*	22 6*	23 6
Geldenhuis Deeps	—	—	—	21 6*	—	
Glencairn Main Reefs	—	—	—	2 0*	—	2 0*
Glencoe (Natal) Collieries	6 0*	—	—	6 6*	—	6 6*
Glynn's Lydenburgs	—	14 0†	—	14 0†	14 0†	—
Government Areas	17 5	18 0	18 0	17 9*	17 9*	18 4
Joh. Board of Executors	—	—	—		—	25 0*

*Buyers. †Sellers.

	Fri., 16th.	Sat. 17th.	Mon., 19th.	Tues., 20th.	Wed., 21st.	Thurs., 22nd.
Jumpers	—	—	5 0†	3 0*	—	3 9*
Jupiters	4 3*	4 3*	4 6*	4 6*	4 9*	5 3*
Kaalfontein Diamonds	0 5*	0 6*	0 6*	0 6*	0 6*	0 6*
Klerksdorp Props.	—	1 10*	1 11*	1 11*	1 11*	—
Knight Centrals	6 7*	7 3	7 2*	7 8	7 5*	8 0
Lace Props.	2 6*	2 7*	2 9	2 9*	3 1*	3 5
Luipaardsvlei Estates	10 0†	8 0*	10 0†	—	10 0†	8 9*
Lydenburg Farms	2 5*	2 8*	2 8*	2 9*	2 9*	3 0
Main Reef Wests	6 1*	6 3*	7 0*	7 0*	7 6	7 9*
Middlevlei Estates	1 0*	—	1 0*	1 1*	1 0*	1 3*
Modderfontein B.	75 0*	—	76 6*	—	75 0*	76 0*
Modderfontein Deeps	36 0	37 9	38 0	38 6*	38 9	40 0
Natal Navigation Colls.	—	14 0*	—	15 3*	15 6*	15 6*
New Boksburgs	0 9*	—	0 9*	—	—	1 0*
New Eland Diamonds	27 0*	27 0*	28 0*	28 0*	27 0*	27 0*
New Era Cons.	5 0*	5 3*	5 0*	5 6*	5 3*	5 9*
New Geduld Deeps	1 9*	1 9*	1 9*	1 10*	1 10*	1 11*
New Kleinfonteins	21 0	21 0*	20 9*	21 0	20 6*	21 6
New Modderfonteins	—	220 0*	225 0*	227 6*	—	225 0*
New Rietfonteins	—	—	2 9*	4 0†	—	2 9*
New Unifieds	—	—	—	—	—	11 3*
Nourse Mines	—	—	—	—	30 0*	30 0*
Orange Diamonds	1 6*	1 8*	1 6*	1 9	1 8*	1 8*
Piggs Peak	9 0*	—	—	9 0*	—	9 0*
Pretoria Cements	41 0	41 3*	41 3*	42 0*	42 6*	44 0
Princess Estates	—	—	—	—	4 6*	4 9*
Rand Collieries	1 0*	1 0*	1 6*	2 0*	2 0*	2 0
Rand Klips	1 9*	1 10*	2 0*	2 1*	2 2	2 7
Rand Nucleus	1 6*	1 6*	1 9	1 9*	2 1*	2 3*
Randfontein Deeps	2 9*	3 9*	2 9*	3 0*	3 0*	3 3*
Randfontein Estates	20 0*	22 0*	23 6	23 3*	23 3*	23 6
Roberts Victors	—	35 0†	35 0†	35 0†	35 0†	35 0†
Robinson Deeps	—	—	29 0*	28 9*	—	29 0*
Rooiberg Minerals	24 0*	—	23 0†	24 0*	24 0*	24 9
Rose Deeps	—	—	—	43 0*	—	43 0*
Ryan Nigels	—	—	3 3	3 0*	3 0*	3 0*
Shebas	—	5 0*	5 0*	5 0*	5 0*	5 0*
Simmer Deeps	1 0*	—	—	2 0	—	2 6†
S.A. Breweries	—	—	—	—	39 6*	—
S.A. Lands	—	2 10*	2 11*	3 0	3 4	3 5
Springs Mines	10 6*	11 3	10 9*	11 0*	11 6*	12 3*
Steyn Estates	—	—	—	8 9*	—	9 0*
Sub Nigels	8 3*	9 0	9 0*	9 6	9 9*	10 1
Swaziland Tins	—	—	40 0†	—	35 6*	
Transvaal and Delagoa	40 0*	40 0*	40 0*	40 0*	40 0*	40 0*
Transvaal Coal Trust	27 6*	30 0	—	—	31 0*	32 6
Transvaal Cons. Lands	—	—	—		—	21 6*
Transvaal G.M. Estates	—	45 6*	48 6†	—	—	48 6*
Tudors	—	—		2 0†	—	1 0*
Van Ryn Deeps	34 0	34 9	34 3	34 6	35 0	36 0
Village Deeps	30 0*	31 0*		31 9*	32 6*	34 0
Vogel Cons. Deeps	—		—	—	—	1 0
Western Rand Estates	—	—	—	—	1 6*	—
Witbank Collieries	—	—		41 0*	42 6*	42 0*
Witwatersrands	63 6*	66 0*	66 0*	68 0*	67 6*	63 6*
Wit. Deeps	51 0	51 9*	51 6*	53 0*	52 6*	52 9*
Wit. Townships	19 0*	—	—	19 0*	—	—
Wolhuters	12 0*	12 3*	12 0*	12 3*	12 6*	12 9*
Zaaiplaats Tins	30 0*	31 0*	—	31 0	31 0*	31 6

*Buyers. †Sellers.

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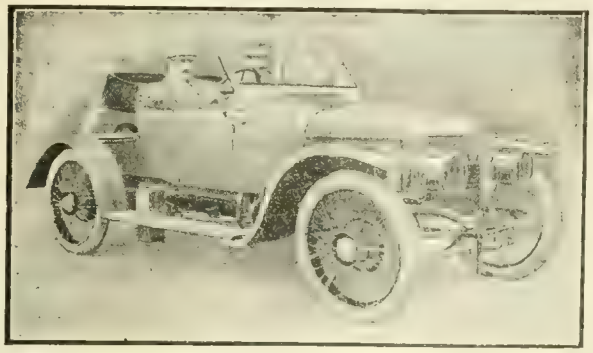

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Automobile Notes.

Transvaal Automobile Club Report.

The report of the Committee of the Transvaal Automobile Club for last year includes the following:—During the year the club has admitted 102 new members, which is very satisfactory indeed, and distinctly encouraging. The committee feel, however, that the work the club is doing, which is set out fully in this report, warrants the support of every user of the motor-car. It is undoubtedly a selfish policy to participate in the benefits secured by the efforts of the club without contributing towards the expense incurred. Throughout the Province, particularly in the outlying districts, there are still a large number of motorists who should enrol, even if it be as associates at the reduced subscription fee. The club's membership at date numbers 402, thus maintaining the club's position of being the strongest automobile club in South Africa. The committee in office during the past year have been:—Mr. F. H. Davis (president), Messrs. C. H. Williams and E. G. Izod (vice-presidents), Messrs. R. C. Atkinson, S. Anderson, J. A. Berry, A. Dowdle, F. W. Duquemin, C. Hoare, L. H. Lavenstein, E. Lezard, B. J. Penney, and J. H. Shillito. Owing to the industrial unrest and the unsettled conditions generally which we have experienced during the past year, the committee's arrangements for the competitions were severely interfered with, and the entries for the competitions were affected in consequence. The thanks of the club are due to Mr. I. W. Schlesinger for his generosity in presenting the club with the handsome trophy which bears his name, and it is hoped that in future years entrants for this event will include motorists from all parts of the Union.

TECHNICAL AND POLICE.

Under this heading it may be stated that the past year has been an eventful one in that it has seen the consummation of your committee's efforts in the introduction of the Motor Car Ordinance. The compulsory licensing of drivers is a matter that the committee of the club for many years past have sought to bring about. It may be of interest to mention that in the past not all of the other automobile organisations in South Africa have seen eye to eye with your committee in this matter. However, the desirability of having compulsory licensing has now been brought home to all. It permits of distinguishing between careful and considerate drivers and the recklessly inclined, and provides for the prohibition, in time, of the latter variety. Your committee would have liked to have seen a Bill passed through Parliament to act uniformly throughout the Union, but since that was not possible, the next best thing, Provincial Legislation, has been obtained. As evidencing the appreciation of the work of the club held by the authorities, it should be mentioned that your committee were asked to nominate examiners from the club membership for the examining boards under the Motor Car Ordinace for the different licensing areas of the Province. This was done in the case of all districts where members were residing, and the names of the gentlemen so nominated have been duly gazetted. Your committee have employed counsel, and have given expert evidence in cases brought under antiquated Municipal Bye-Laws, and it is satisfactory to note, in regard to the speed bye-law, that for some time past trapping has been discontinued by the police, except where the speed has exceeded twenty miles per hour.

RAILWAY FREIGHTS.

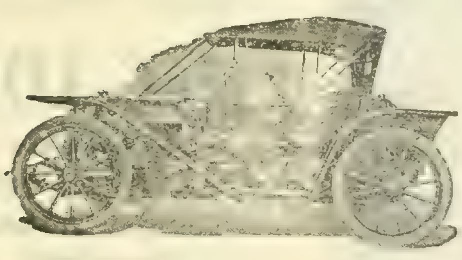
The rebate of 33½ per cent. on the transport charges made by the Administration of the South African Railways and Harbours for conveying privately owned cars over the Union Railways, which your Committee were able to secure, is a sufficient reward for the time spent in interviews and negotiations extending over a long period. Members' thanks are also due to Mr. F. Girdler Brown for the interest he displayed in this matter. The conditions under which the rebate is granted might be further modified, and your Committee are now directing their energies towards this end. In this matter it should be mentioned that the R.A.C. of South Africa gladly agreed to your Committee's suggestion that they should co-operate in this matter. The benefits obtained will, of course, now be available, not only to members of this Club but to tourists throughout the Union.

ROADS AND MAPS.

That motorists are venturing more and more into hitherto inaccessible parts of the country is evidenced by the increased demand upon the Club's resources for maps and information regarding roads. The Club records are naturally not as complete as they might be, although a considerable sum has been spent in this connection, but if members would only furnish the Club with information and, if possible, rough sketches of trips made by them, the Committee would gladly have proper tracings made, while the information would be welcomed by others having occasion to make the same trip. Under this heading your Committee would like to record their appreciation of Mr. and Mrs. Holloway's valuable contribution to the Club records.

WARNING SIGNS.

Your Committee propose submitting a scheme for the erection of warning signs for motorists at dangerous hills, corners and crossings through the Province, similar to the work done by automobile organisations in Europe and the United States of America. It has not been possible for his work to be taken in hand before, due to the expense incurred, and the Club's lack of funds for this purpose. There are undoubtedly many places on the roads of the Province where the



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erecting of such signs would materially minimise the risk of dangerous accidents. Suggestions as to suitable spots for placing these signs would be welcomed by your Committee.

THE COUNTRY'S DEFENCES.

The remarks made by General Beyers on the occasion of the presentation of the Schlesinger Trophy on the part that might be played by the motor car in military operations should be borne in mind by all motorists. The subject is, of course, not a new one as far as the club is concerned, as the late Mr. Dowell Ellis, during his term of office as president, was an enthusiast on the subject, and certain trials and tests were carried out at the time. Our president, however, in his reply to General Beyers' speech, assured him that should they be needed the services of the members of the Club would be readily forthcoming. It is highly probable that a scheme will be evolved by the military authorities in the near future, in which the motor car and its driver will be called upon to play a prominent part, and your committee trust a ready response on the part of the members will be given.

CO-OPERATION WITH MOTOR CYCLISTS.

Your committee, at the last annual meeting, were requested to consider the advisability of co-operating with the motor cyclists' organisation. Acting upon this request, negotiations were opened, but it is a matter for regret that your committee's overtures have not engendered that spirit of reciprocity which was hoped for. There can be no doubt that the fusion of effort on the part of motor car owners and motor cyclists could have nothing but good results in scoring legislative reforms, and other benefits of mutual interest to both sections. In concluding this report, your committee venture the opinion that the foregoing is at once a complete and satisfactory answer to the pertinent question so often encountered: "What is the club doing?" It is not always possible or politic to keep members advised on matters still pending, but the results achieved during the past year speak for themselves. There is still a lot of work to be done, and the committee trust that the support of the membership will be readily accorded to the incoming committee, for which nominations should be freely received. Thanks have to be expressed for the courtesy and consideration shown to the club by the Administrator, the Railway Administration, the roads officials, the police, the Municipal authorities, and the Press.

New Companies.

4341 Cassim Adam, Ltd., 155, Prinsloo Street, Pretoria; capital, £2,000.
4342 Bokkraal Development Co., Ltd., 19-20, Norwich Union Buildings, Fox Street, Johannesburg; capital, £4,800.
4343 The Naboom Tins, Ltd., 5, Colonial Mutual Buildings, Fox Street, Johannesburg; capital, £12,500.
4344 Lachpur Trading Co., Ltd., Stand No. 569, corner Park Road and Lover's Walk, Fordsburg, Johannesburg; capital, £500.
4345 The National Investment and Trust Co., Ltd., 12, Hatfield House, corner Eloff and President Streets, Johannesburg; capital, £5,000.
4346 Buchanan Gold Mining Syndicate, Ltd., Buchanan Gold Mine, on Farm Waterval No. 48, near Sabie; capital, £4,800.
4347 The Sundays River Settlements, Ltd., Exploration Buildings, Commissioner Street, Johannesburg; capital, £50,000.
4348 T. R. Lewis, Ltd., 116, Market Street, Pretoria; capital, £2,000.
4349 Istvania Gold Mining Co., Ltd., 12, Albert Street, Johannesburg; capital, £12,000.
4350 Witfontein Estates, Ltd., 8, Grosvenor Chambers, Loveday Street, Johannesburg; capital, £300.
4351 The Pretoria Detinning Co., Ltd., St. Andries Chambers, 222, St. Andries Street, Pretoria; capital, £500.
4352 Brakpan Real Estates Syndicate, Ltd., Lot No. 1030, Market Square, Brakpan; capital, £1,700.
4353 Albert Phillips and Co., Ltd., 23, Beckett's Buildings, President Street, Johannesburg; capital, £1,000.
4355 Reunert and Lenz, Ltd., Consolidated Building, corner Harrison and Fox Streets, Johannesburg; capital, £100,000.
4356 The Delta "D" Co., Ltd., 5, Breda Chambers, corner Rissik and Fox Streets, Johannesburg; capital, £2,500.
4357 Star of Rhodesia, Ltd., 148, Exploration Buildings, Commissioner Street, Johannesburg; capital, £2,500.
4358 The African Plumbing and Metal Works, Ltd., corner Main and Kruis Streets, Johannesburg; capital, £10,000.
4359 Fine and Fine, Ltd., 63, Juta Street, Braamfontein, Johannesburg; capital, £2,000.
4360 The Premier Mine Dairy Farmers' Association, Ltd., Premier Mine, Transvaal; capital, £100.
4361 J. Whitford-Griffiths and Co., Ltd., 54, Sauer's Buildings, Loveday Street, Johannesburg; capital, £1,500.
4362 Friedmann and Foy, Ltd., Pinns Buildings, corner Market and Kruis Streets, Johannesburg; capital, £12,500.
4363 The Standard Fresh Milk Supply Co., Ltd., 188, Market Street, Johannesburg; capital, £4,000.
4364 The Wolhuter Crushed Stone Suppliers, Ltd., Bain's Buildings, Commissioner Street, Johannesburg; capital, £2,000.
4365 African Cinemas, Ltd., Royal Arcade, Stand No. 1569, Pritchard Street, Johannesburg; capital, £1,100.
4366 Critic, Ltd., Mercantile Buildings, corner Commissioner and Simmonds Streets, Johannesburg; capital, £500.

Foreign Companies Registered.

4354 Ellams, Ltd., c/o Herbert Frith Bailey, 33, Rissik Street, Johannesburg, and Harry Edgar Knowles, 33, Rissik Street, Johannesburg; capital, £1,000.

Prospectuses.

— The South African Co-operative Land Endowment Co., Ltd., Johannesburg.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

Feb. 27.—Southern Freeholds; South Deeps; East Rietfontein Syndicate (annual).
March 13.—Worcester Exploration (annual).
March 16.—Robinson; Crown Mines (special).
March 20.—Apex; New Kleinfontein; Benoni Consolidated (special).
March 27.—Simmer Deep; Jupiter (annual).
March 31.—Cassel Coal Co. (annual).

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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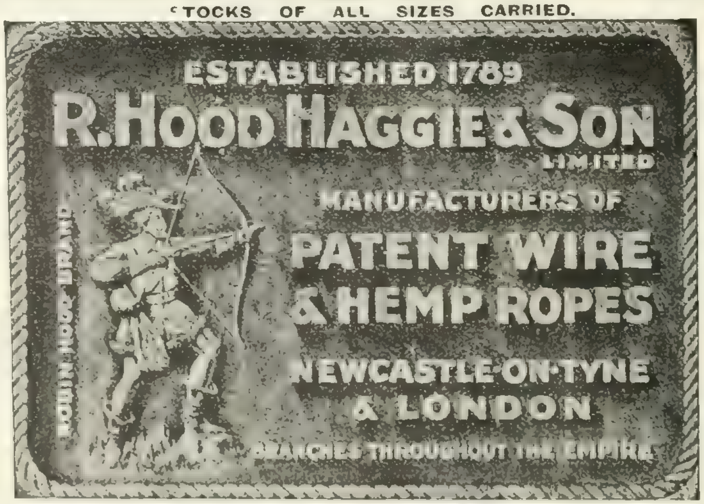

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Notes and News.

Leeuwpoort Tin. The plant at the Leeuwpoort Tin Mine is being enlarged by the addition of calciners to treat 1,000 tons a day. The grade of ore dealt with averages 2 per cent. tin, and working costs are lower than those of any other tin property in this country. A big future is predicted for the property, when initial reduction difficulties are overcome.

* * * *

New Transvaal Chemical Co., Ltd. The annual report of the New Transvaal Chemical Company, Ltd., published in London last week shows net profits of £22,000 for the year ended June 30 last. Presumably this does not include any part of the profit derived from the sale of the claims to the Wit. Deep, which transaction was not completed until after the close of the financial year. Despite the labour troubles, the business of the company is now improving, and better profits can be anticipated for the current year.

* * * *

Economic Commission's Report. It is understood that Professor Chapman, Chairman of the Economic Commission, having completed his labours, sailed for England on Saturday. The Economic Commission has presented an unanimous report to Government on the cost of living and the labour questions, on which it was appointed to report. The report is being printed and will be laid before Parliament at an early date.

* * * *

The Messina Co. and Water Supply. The drought has at last broken in the Northern Transvaal, and the information is hailed with considerable delight by officials of the Messina Transvaal Development Company. The management of the copper mine near the Limpopo have been watching with some anxiety the lowering of the water in the Zand River pools, from which the company draws water by means of the electrical pumping installation completed some little time ago. The breaking of the rains in the Zoutpansberg district should now ensure a regular and ample supply for the new concentrating mill.

* * * *

The Colour Bar. The only fault we have to find with the clear and comprehensive statement on the colour question and labour by the Chamber of Mines before the Economic Commission is that it does not go far enough. In measured terms and with deadly logic it shows the utter artificiality and obvious "impossibility" of the present state of things, as buttressed up by the Mines, Works and Machinery Regulations. But, in a curious spirit of modesty or reticence, which marks most of the other evidence given by the Chamber, no attempt is made to point the obvious moral. The effect is curiously incomplete, like a speech without peroration or a leading article without conclusion. The case is stated, and amplified, but without any summing up or without emphasis on its significance. The explanation seems to be that the Chamber had sufficient confidence in the Commission's "quickness in the uptake" to relegate to it the thankless task of drawing the obvious, though none the less unpopular, conclusion.

* * * *

Witbank Collieries. Mr. W. H. Dawe had a most satisfactory statement to make at the annual meeting of the Witbank Collieries, reported in full elsewhere in issue. The output for the year amounted to 756,631 tons, which was an increase of 10,008 tons on that of the previous year, and the consulting engineer and manager both point out that the areas developed in the Witbank and Uitspan districts show a continuation of the average thickness of the seam, whilst the quality continues equal to any in the district, and the development which has been done is capable of providing sufficient working faces to double the present output, if that were necessary. Another item of interest is the fact that information obtained by boring in advance of the present workings indicates that on the present basis of output from the Witbank and Uitspan Collieries, of about 70,000 tons per month, the life of the company's holding will be well over 30 years.

* * * *

Tweefontein Power Scheme.

A proposal is on foot to construct a large electrochemical works at Tweefontein, adjacent to the colliery of that name. Plans prepared by Messrs. Harper Bros. & Co. indicate a Mond producer plant to deal with 400,000 tons of coal a year, boilers fired with producer gas, and a steam turbine plant of 15,000 k.w. The chemical plant will produce 22,000 tons of sulphate of ammonia and 10,000 tons of tar and distillates a year. Tests with this coal in similar producers show a yield of 119 lbs. of sulphate of ammonia per ton under ordinary working conditions. The power plant will be coupled by means of a 50-mile, 80,000-volt transmission with the Rand power supply.

* * * *

Safety and Sanitation.

An interesting feature of the work of the Illinois Steel Company is the employment of "plant preachers," who talk interestingly on the subject of accident prevention to their fellow-workmen during the lunch hour. The result of this and numerous other devices has been the saving from injury and death of many good men since 1906, corresponding to a decrease of 46 per cent. in the number of accidents. The important effect of light on accidents is shown by the fact that in some lines of industry the number of accidents at night is double that in the daylight hours. The extra cost of illumination is often repaid by the more effective work thus rendered possible, making the saving in accidents clear gain.

* * * *

Strike Losses.

Some of our daily contemporaries have been making more or less wild guesses at the losses entailed to trade and industry by the recent Rand strike. Few things, of course, are more difficult to estimate closely than the actual losses caused by a strike. Extravagant sums are frequently named, and it is seldom that the amount of the losses is anything more than a wild guess, too apt to be influenced or to vary according to the writer's view. Attention has been called to this point by a statement in a contemporary purporting to give the losses resulting from the miners' strike in the Lake Superior copper country. This not only allows for the loss in wages of the men, for the necessary care of the mining properties, and other legitimate charges, but includes the amount by which copper sales have fallen off during the strike. This last is wholly unreasonable. The receipts of the companies have been less, of course, but the copper has not disappeared. It is still in the mines and will be taken out and sold in due course, when the strike is over.

* * * *

One Hundred and Thirty Millions of Gold Since Union.

It is at least an interesting calculation to find that since the commencement of Union and up to the end of last year, gold mining, the premier industry of the country, had resulted in the production of precious metal worth the enormous sum of over one hundred and thirty millions sterling. The exact figure is £130,224,191 since May, 1910! The figure should serve to bring home to all the tremendous importance of the gold mines to the country. No doubt in time agriculture will assume pride of place in industrial statistics, but that it is folly to place agriculture in front of mining at present the above figures abundantly indicate.

* * * *

The Concentration of Tin Ores.

It has been an open secret for some time past that at certain of the Waterberg tin mines the presence of iron (both as hematite and magnetite) in close association with the cassiterite has been a big hindrance to effective concentration. It is stated that at one mine in the area referred to electro-magnetic separation has been tried, but for some reasons which are not at present very clear this method has so far been unsuccessful. With a view to separating the tinstone from the intimately associated ores of iron, Mr. E. Kenyon, an experienced mill and concentrator man, has recently devised a method from which good results are expected. The Kenyon method of finally dressing tin ores consists in the main in grinding the ore coarsely and then passing the pulp over a series of seven concentrating tables fitted with riffles. Mr. Kenyon's idea is to avoid the creation of slime, and he contends that by means of this method separation of cassiterite from the closely associated iron ores can be effected without difficulty and at very moderate cost. No doubt more will be heard of the idea in the near future.

* * * *

The "Palmers North Rand Syndicate."

The evidence submitted to the Economic Commission by the Chamber of Mines in regard to the "life" of the Witwatersrand mines serves again to direct attention to the fact that in practically every instance the duration of the productive and profit-earning period is considerably lengthier than has generally been anticipated. In a recent issue we announced that the old Champ d'Or mine had been purchased by Mr. Roy Lewis and was being resuscitated. This is one instance of a mine which has come to the end of its tether under limited liability auspices being found to contain sufficient ore to justify working on a smaller scale, but perhaps the most striking case in point is the old Stanhope. Years ago it was given out that this mine was exhausted, but it was subsequently revived as the Burham and for a long period was worked as such. Latterly this little Main Reef property has been again revived by the Palmer's North Rand Syndicate. We understand that under these auspices the mine is giving very good returns. The syndicate has recently added to the equipment and amongst other additions a number of steel cyanide vats have been installed. Considerably better results are expected in consequence of these additions.

* * * *

More Libels on the Rand.

A *litterateur*, writing apparently from South Africa, contributes to the alleged literary weekly run by Mr. T. P. O'Connor, M.P., in London, an article purporting to give the whole truth about the miner's life on the Rand. The article is obviously prepared for Home consumption, and is written admittedly from the anti-employer's standpoint by one prejudiced against the mines though without practical experience of their working. Naturally, errors abound, and the whole concoction is a bad example of the sort of stuff compounded of ignorance, ill-will, and hearsay, that is served up in a section of the Press for the delectation of overseas readers. Miners' phthisis, of course, is described in terms calculated to make the flesh creep; and as if the truth were not bad enough, the Rand is saddled with, amongst other evils, a "tropical climate." *Inter alia*, our precious author remarks: "The policy of mineowners is to keep these workers poor and dependent. Until the Great Strike the miner had no resort and no redress. Gold, by whoever possessed, holds a powerful sway, even over the government of a country. In order to choke complaints a by-law was made in Johannesburg that mine employees can be discharged at twenty-four hours' notice." and so on! An amusing commentary on the "poor and dependent" wheeze is contained in the succeeding paragraph which tells how a "pore miner" was only given a cheque for £50 for a month's work when he had really earned £75, and how the rascally mine manager was forced to disgorge the balance of the "pore" man's pittance! Mention of the miner's cheque rather gives the author's case away, as workers in England are not likely to waste much sympathy on people who draw such princely pay, despite the mineowners' desire to keep them "poor and dependent."

* * * *

Tin and Copper Production.

The "Copper and Tin Statistics," just issued by the Chamber of Mines, show that the production of copper in the Transvaal last month was 930·7 tons containing 10·68 per cent. of metal, this constituting a record output for the Province. The whole of this was derived from the

Messina Mine, from which still larger outputs may be anticipated in the near future. From the Namaqualand Copper Mines 1,205 tons of marketable produce, containing 50·25 per cent. of pure metal were raised, but no ore was shipped from the Cape during the month, and the total sales and shipment for the Union are given as 733 tons of a value of £17,788, as compared with 2,501·160 tons of a value of £69,912 in November, when there were shipped 2,025 tons from the Cape. In regard to tin production, the total output of marketable product was 399 tons, of which practically all—to be precise 397 tons—was derived from the Waterberg district of the Transvaal. The Cape raised 2¼ tons of 72 per cent. value. The Transvaal ore contained just under 66 per cent. of pure metal. Sales and shipments of tin ore for the whole Union came to 388·351 tons of a value of £38,614 as compared with 378·952 tons of a value of £39,425 in November.

* * * *

The Flow of Capital.

The figures published in the *Economist* of January 3rd show that during 1913 the total amount of fresh capital subscribed in London for South African enterprises was £6,294,000, of which £1,306,000 was taken by mining companies, and £4,000,000 by the Union Government, this being the loan issued at 4 per cent. soon after the close of last session. The destination of the remaining million is not shown in the *Economist* figures, and it is to be presumed that it represents comparatively small amounts, distributed among various enterprises. For comparative purposes it will be useful to trace the movement of capital to South Africa during the past few years:—New capital issues: 1910, £3,379,100; 1911, £4,387,100; 1912, £3,862,600; 1913, £6,294,700. It is important to observe that if we omit the Union 4 per cent. loan of last year, there has been a steady fall in the inflow of capital for industrial purposes since 1911; and the total volume of South Africa's borrowings on the London market in the four-year period is less than eighteen millions sterling, substantially less, that is to say, than Australasia's borrowings last year, and little more than one-third of Canada's borrowings in 1913. Very nearly all the capital introduced in the four years—apart from the Government loan—has been in respect of mining. Thus in 1911 mining enterprises appropriated practically four millions of the £4,387,100 raised in London. In 1912 the total capital so raised was £3,862,000, of which mining enterprises appropriated £2,411,000, and in the year just ended the mining capital raised amounted to £1,306,500, out of a total issue—apart from the Government loan—of £2,294,000. Such a position is far from satisfactory, even from a mining point of view.

* * * *

Union Steel Corporation.

The past year was an eventful one in the history of the Union Steel Corporation at Vereeniging, inasmuch as it saw the completion of all constructional work and the commencement of production. Operations were actually started at the beginning of August, but the melting furnace was not brought into commission until about the middle of September. At the outset things did not work satisfactorily, and the chairman of the company (Col. Patchett), who is himself a practical ironmaster, lost no time in proceeding to the company's works at Vereeniging. Mr. Isaac Butler, who is well known in the steel world, and who was so favourably impressed with the corporation's prospects that he consented to join the board, also paid a visit to the works. These gentlemen are now in South Africa, and Mr. Butler has stated that he does not intend to come back until he sees the works running satisfactorily. The delay in reaching the producing stage, however, has caused financial stringency, and it will be necessary to make arrangements for the future financing of the corporation. Mr. Rowsell, who presided at the meeting in London recently, stated: "There is one feature—the products of our works appear to be quite satisfactory, and, therefore, we should eventually be able to secure our full share of the great market for which we are catering, in addition to which I may remind you that we have a preferential right to supply the railways with our goods." A change of management is also contemplated.

TOPICS OF THE WEEK.

THE CHAMBER OF MINES AS PROPHET

"One cannot," says the proverb, "argue with a prophet;" and it is not for us, even if we could, to attempt to refute the estimate of the life of the Rand framed for the Economic Commission by the Chamber of Mines. But not being crusty old curmurgeons, sans faith and hope and everything but irredeemable pessimism, we frankly refuse to accept the point of view of the framers of that now famous estimate that has frightened all the old women in the land. It is all very well for the Secretary of the Chamber to explain blandly that the statement merely "shows clearly that the successful working of the large bodies of low grade ores is a matter of vital importance for the industry and for South Africa," and "that the extent to which these important bodies can be opened up and exploited depends very largely on cheap railway rates." If the statement only did that and nothing more no one would have a word to say against it. If that is all it is meant to convey, however, its drafting has been somewhat unfortunate, for its main message appears to be slightly different, and the real moral has been left to the newspapermen and commentators who have had to search closely for the intention of the draftsmen, and then, when they found it, to proclaim and emphasise the truth. Of course no one acquainted with the industry is deceived, or is likely to misinterpret the report or its intention. The reservations and qualifications faintly sprinkled through its pages, are eloquent of the danger of reading the whole carelessly or without giving its due value to each warning signpost. Still, it is a drab piece of writing, unillumined by any belief in scientific progress, mechanical advance or the evolution of mining. Apparently the application of science to the problems of mining has come to the end of its tether. Apparently, the last word has been said in the increasingly economical reduction of Rand ores. Apparently the spirit of progress that has carried the Rand so high and so far among world-industries is to die, suddenly and completely, with the fatal year 1913. Frankly, we refuse to believe it. We refuse to believe that the dismal, jaundiced and doleful prophecy embodied in the Chamber of Mines Report on the future of the Rand is the true one, though the logic seems sound and the Doré-like artificial darkness, with which the facts are coloured, only vaguely discernible. The Chamber of Mines, masquerading as Cassandra, is a sight that leaves us cold and unimpressed. Doubtless, when the report in question was prepared there was good ground for melancholy and depression. The dark days of the 1913 strike had just closed, and men badly afflicted with "Julyitis," asked themselves vainly what future now lay before the Rand. But today the outlook is different. The chaos and topsy-turvydom of last year has given place to the ordered forces of progress. Labour is no longer King. The pyramid that for six months—from July to December—oscillated on its apex, has now been firmly replaced on its base. Unrelieved pessimism has given way to reasoned, if chastened, confidence and cheerfulness. The industry never was in a sounder position. Freed from the attentions of parasitical mischiefmakers, its authority vindicated, and its new-found problems on a fair way to solution, the Rand has seldom begun a New Year better. With the native labour supply daily improving, the outlook may almost be described as rosy. In such a prospect there is no place for the ululations of the prophets of Doom. The Chamber of Mines is doubtless perfectly right to take what it thinks the most effective means of bringing home to the Government the vital necessity for reducing taxation and railway rates, and it may be that we ourselves are to blame if we take too seriously what is, after all, merely an excellent piece of special pleading.

FACTS FOR THE ECONOMIC COMMISSION

Though the evidence presented to the Economic Commission by the Chamber of Mines is labelled "confidential," it appears to have been in the hands of the London "Times" three weeks ago, and the daily papers of the Rand have been filling up their waste spaces with more or less illuminating slices of it for a week past. Of the fourteen statements that go to make up the Chamber's evidence, much is not new—indeed, could hardly be new, in view of the hackneyed terms of reference with which they deal. Thus the tables and figures showing the impossibility of substituting white for black labour on the mines of the Rand—though seized upon by the daily press as a startling novelty—appeared in our columns six months ago, and were, of course, included in the blue book issued by the Parliamentary Committee on White Labour last year, Moreover, the conclusions on the cost of living on the Rand, though given with a wealth of detail and much industrious marshalling of facts, may be said to exhaust the obvious and merely to repeat the commonplaces of Rand economics, familiar, since the war, to every one who has given any thought to the matter at all. Of unequal interest and value, the various statements, with the exception of two, may here be sufficiently summarized. In the first, which is in the form of a covering letter, doubtless to lend an added emphasis to its wording, the Secretary of the Chamber dwells upon the age-old inequities of railway rates and customs dues. The statement on the subject of cost of production on the Rand carries us somewhat further than the Mining Industry Commission Report of 1907. Taking the average yield for the Rand in 1912 as 29s., the margin of revenue over all costs available as remuneration of capital is shown to be 6s. 5d., almost exactly equivalent to 7 per cent. on the combined capital (working and property). The present remuneration on the capital invested in the present producing mines is on the basis adopted, 7 per cent., with redemption at 3 per cent. On its own showing the statement put forward dealing with the cost of production in other countries cannot be taken seriously. The Chamber says: "The figures given are put forward as being the only ones available. They have been carefully compiled from the published reports, and as far as possible on the same basis, but cannot be taken as being of any great value. In order to obtain figures that would give a true comparison of the cost of production, a personal investigation in each case of all the conditions affecting the costs would have been necessary, and this, of course, would be out of the question, owing not only to the lack of time required, but also to the great expense that would have been incurred." In regard to the question of a minimum wage, the Chamber has no difficulty in proving that there is not the slightest warrant for the creation of any statutory machinery for the purpose of establishing a minimum or subsistence wage, as the evil of "industrial parasitism" is, in this country, unknown, and it is not desirable for the State to interfere on other grounds. The vexed question of mode of payment on the mines is dealt with in a very clear, if inconclusive, statement. It is shown that there are three systems of underground contract work for stoping, development and shaft sinking on the mines of the Witwatersrand, and schedules showing the rates of pay under each system, have been presented to the Commission. It is pointed out that at the present time many Consulting Engineers and Managers are in favour of a contract system of some kind for certain classes of white employers, and others are opposed to it. Nearly all the Consulting Engineers have stated that of the three systems of contract, they are in favour of the third system mentioned in the statement presented, namely, day's pay plus bonus, or day's pay plus contract. The Consulting Engineers consider that with white employees generally on a supervisory basis, some incentive, dependent on the work done, should be given, and natives, where found advisable, placed on piecework, the disabilities and restrictions under which the native now labours being removed. The Chamber concludes "Irrespective of any difference of opinion as to the most effective basis upon which labour should be employed, it is unanimously and strongly held that the determination of the system of payment for the work performed should not be the subject of any legislative interference." On the once burning question of changes on the mines, a statement is presented showing that in October last, out of 10,733 men working underground on the Rand, the percentage of number discharged to number working was 13.77, and on the surface only 3.88 per cent., or an average of 8.92 for the whole Rand. Here, certainly, a few cold figures answer all the vague attacks more eloquently than any long-winded statement could possibly do. In regard to the question of payment for overtime, the Chamber holds that the rates of pay should not exceed those of the ordinary working hours, and quotes supporting evidence to that effect given by Prof. J. G. Lawn and Mr. W. McC. Cameron before the Sunday Observance Commission. In another statement the question of shifts is dealt with, and it is conclusively shown that eight hours at the face is the minimum time within which a day's work can be performed with any degree of efficiency consistent with carrying out the regulations, including measures for health and safety, and under the restrictions which now limit the sphere of usefulness of the native. The progress of the prevalence of miners' phthisis on the Rand and in other countries is exhaustively reviewed in another statement, and it is shown that the disease constitutes a serious problem from the economic, quite apart from the humanitarian point of view. The statements on the future of the Rand and on the employment of labour in relation to the colour question are given more extended review elsewhere in this issue. Nearly half the report is devoted to the question of the cost of living. The memorandum admits that the cost of living is higher—absolutely, that is, not in relation to wages—on the Rand than in other countries, and ascribes the fact to two causes first, that the same article of consumption costs more; secondly, that "the working man demands more from the world here than elsewhere." The second of these causes "is beyond reach of outside influence, even if it were desired to exercise it." As might be expected, the first remedy suggested is the reduction of rail charges and Customs duties. It is shown that if "one-third of the railway charges could be saved, and all the Customs duty knocked off." the Rand worker's family budget would be reduced by about £1 per month. As regards the facts, the tables, so far as they go, uphold the argument of the introduction that, "excluding rent, on the Witwatersrand and in the other mining centres of the Premier Diamond Mining Company, Witbank, and Kimberley, the working man enjoys a considerably higher real wage, as well as nominal, than that paid in any of the other principal industrial countries, with the exception of the United States, where it seems probable that real wages are about on the same level." On the Rand, as in all South African centres, rent is a much larger item than it most other countries. Roughly, rents on the Rand are twice as high as in Australia, two and a half times as high as in the United States, five times as as high as in the United Kingdom, and five and a half times as high as in Germany. Other statistics go to show that real wages on the Rand are higher than in other countries. One of the most striking tables demonstrates that the English working man, with an average wage of less than one-third the wage of a man in a similar position on the Rand, has to spend more than three-fifths of his weekly income on food alone, whereas the Rand man spends only a little more than two-fifths of his wages on food, though, as has been shown, he lives well—probably much better than the Englishman. The general conclusion in regard to the "standard of living" is summed up in the following table (in which allowance is made for differences in rents): Rand, 100; England, 64; Germany, 40; U.S.A., 106; Australia, 81; Western Australia, 78. This means that an English artisan coming to the Rand and obtaining work at the standard rate (for the classes of workers taken for purposes of comparison) of £6 per week, would be able, after paying the higher charges for rent, light, and water, and otherwise living as he had been accustomed to live in England, would have 33s. 1d. left every week either to save or to spend on additional luxuries. Thus it will appear, on the evidence reviewed, that the cost of living, relatively to wages, is considerably lower on the Rand than in the United Kingdom Very wisely, however, the Chamber refrains from attempting to point any moral from all this. The obvious conclusions will doubtless be drawn by the Economic Commission, and if all accounts be true, its report, now in the press, should prove a very crisp and informing document indeed.

THE PRESENT POSITION OF THE RAND.

An Analysis of 1913 Results—Comparisons with Figures for Preceding Years—Heavy Loss in Milling Time Last Year—A Peep Into the Future.

Now that precise figures are available in regard to the operations of Witwatersrand gold mines during the past year, it will be of much interest to venture on a more detailed comparison of the results secured in 1913 with those obtained in 1912 and other years than has hitherto been practicable. Attention has already been directed to the decreased production of gold and to the increase in the dividends declared, and it is here primarily intended to contrast the statistics of 1913 and preceding years particularly in regard to sorting, ore milled, profits earned, and yields, costs and profits on the basis of a ton milled. At the outset, however, it will be best to make the position clear in regard to the value of the gold output and the amount distributed by the mines in the form of dividends. For the Rand the figures for 1912 and 1913 compare as follows:—

	Gold output.	Dividends declared.
1912 … … …	£37,182,795	£7,952,994
1913 … … …	35,812,605	8,194,099

A decrease of £1,370,190 in the output and an increase of £241,105 in dividends is thus to be observed.

The Milling Time Factor.

Last year's results were, of course, abnormal in comparison with those of the other years dealt with in the course of this article because of the strike at the New Kleinfontein mine, which culminated in the industrial upheaval of July last. Except in the case of the New Kleinfontein and in lesser degree in the cases of the Van Ryn and New Modderfontein, the actual period of inactivity was very short—not more probably than an average of four days for all the mines of the Main Reef gold field. Still, four days in the case of an industry crushing ore at the rate of over 82,000 tons per day is a big consideration. In addition, the cumulative effects of the strike which included extreme shortage of labour, loss of milling time, unsettled conditions in the mines, and the closing down of one property were acutely felt for the rest of the year. In order to properly appreciate the statistics appended, it is necessary to consider carefully the factor of running time. In 1912 the Rand recorded 325·4 milling days (each of 24 hours); in 1913 the Rand's milling days numbered 312·18. Now the diurnal rate of production on the Rand during 1913 was about £114,800. It may, therefore, be easily calculated that had there been as many milling days in 1913 as in 1912 the output for last year would have been nearly a million and a half pounds greater than it actually was. In other words, the 1913 production, instead of being less than in 1912 would have constituted a fresh record in the output annals of the field. A further word seems to be called for in regard to dividends. Notwithstanding a lesser production and decline in working profit the distributions for last year as already remarked are higher than in 1912. This seeming anomaly is not difficult to explain. The increased distributions are the consequence of the entry of the Van Ryn Deep into the productive list and the liquidation of liabilities by the Consolidated Langlaagte which enabled that company to commence paying out dividends to shareholders.

Year's Results in Brief.

Having established the foregoing points the following table is appended for the consideration of students of Rand mining companies' statistics:—

There are a number of features in this table which call for special consideration. Firstly, it will be observed that the percentage of waste rock rejected shows further contraction. Since 1908 ore sorting practice on the Witwatersrand has declined by 50 per cent. and there are to-day some mines which reject none, or practically none, of the ore raised to surface. The Knights Deep is a noteworthy example. After thorough investigation of the various economic considerations the management of this concern decided that it would be profitable policy not to reject any rock as waste. The problem of sorting has, of course, to be carefully considered in relation to different mines where different milling capacities and stoping widths obtain, but the curtailment of sorting practice is evident along the whole reef and is a necessary corollary to and adjunct of the "big mill idea." Effects of this policy of accelerated production which involves greater stamping capacities and aims at the reduction of working costs and the earning of profits from low grade ore is further evidenced in the figures relative to yield or recovery per ton. Last year's earning on the unit basis was 2d. below that of 1911 and is the lowest on record. In comparison with 1912 the yield is 1s. 3d. per ton less. As against this working costs were reduced by 9d. per ton and consequently the profit per ton in 1913 was 6d. less than in 1912. Less stamps were dropping but 16 more tube mills were in commission, and the duty per stamp per day increased by ·43 tons whilst in the aggregate the tonnage milled advanced by 142,071 tons. This increase in tonnage and decrease in costs were, however, insufficient to stem the adverse tide of reduced grade or yield per ton, and in consequence profits show a contraction of, roughly, half a million sterling.

The "Big Mill" Policy.

It is again evident that anticipations of a few years ago in regard to an automatic lowering of costs as mills were increased and tonnages augmented has not been realised. Since 1908 the tonnage milled per annum has been raised by 40 per cent., yet the profit of last year in comparison with that earned in respect of 1908 shows very small appreciation, whilst costs were only 1d. per ton less. Despite the gloomy predictions of the Chamber of Mines Committee in regard to the future of these fields, we believe that there are good reasons for hoping for some improvement in the not far distant future. There can be but little doubt that the Rand in so far as production is concerned has practically reached its zenith, but there is certainly abundant room for improvement in regard to the organization of labour underground, both black and white. In face of extended operations the improvement of health conditions and the introduction of labour-saving appliances, mine working costs have been disappointingly high for some years past. No doubt discontent amongst white employees, despite the high wages paid, is largely answerable for this.

The Future.

We believe that one of the direct results of the recent suppression of the anarchy of syndicalism will be to create a more settled social atmosphere along the Rand. There are already signs of this. Whatever the result of the recent Trades Hall ballot may have been we feel certain that the majority of the men had no wish to join in the recent upheaval. We feel sure, too, that without the fiery eloquence of professional and practically disinterested agitators, the men would work far more contentedly, and contentment means better work. The cost of mining low grade ore can by this means be reduced without curtailment of wages. Herein lies the Rand's salvation.

Year.	Sorting. %	Tons Milled.	Stamps.	Stamp Duty Tons per 24 Hours.	Tube Mills.	Per Ton Milled. Yield. s.	d.	Cost. s.	d.	Profit. s.	d.	Total Profit.
1908 … … …	15·50	18,196,589	8,591	6·27	89	31	5	18	0	13	5	£12,011,227
1909 … … …	14·45	20,543,759	9,158	6·79	134	28	11	17	1	11	6	11,794,376
1910 … … …	13·64	21,432,541	9,205	7·19	170	28	6	17	7	10	6	11,216,105
1911 … … …	13·01	23,888,258	9,432	7·88	216	27	11	18	0	9	7	11,415,861
1912 … … …	12·57	25,486,361	9,449	8·39	262	29	0	18	8	10	0	12,678,095
1913 … … …	10·74	25,628,432	9,377	8·82	278	27	9	17	11	9	6	12,189,105

A RECORD YEAR FOR THE PREMIER DIAMOND MINE.

Value of Output, £2,336,828—Value of Production to Date, £14,960,004—Area of the Pipe Unchanged—Position Most Satisfactory.

The statement up to 21st October last of the Premier D.M. Co., Ltd., shows record results, and, generally, a most satisfactory position. The number of loads washed was 10,435,000, as compared with 9,707,000 in the preceding period and less than a million in 1903-4. At .202 carats the yield per load fell a trifle short of that for the previous year. In this respect there has been a marked falling off within the past decade, the average for 1903-4 being .798 carats. The value averaged 22s. 2d. per carat—a continuation of the improvement which has been in progress the last few years, although below the average of the earlier years; in 1905-6 28s. 5d. was realised. Costs have moved similarly. The value of the diamonds recovered totalled £2,337,000, as against £2,005,000 for 1911-12 and £1,703,000 for 1906-7—the previous highest. The net profit fails to show a corresponding expansion owing to the revenue being debited with £85,000 initial and current contributions to the provident and pension fund created in November, 1912, in commemoration of the tenth year of the Company's career.

After this deduction the balance came out at £1,003,000, an increase of £270,000 upon the figure for 1911-12 and representing very nearly double the 1910-11 amount. Sundry revenue provided £78,000, or £5,500 less than before, but on the other hand the balance from last accounts was £12,600 higher at £100,100. After bringing in £462,000 profit in sussense and deducting the Government's 60 per cent. the sum available for distribution amongst the shareholders stood at £516,600, in place of £440,100 in 1912, when the profit in suspense item accounted for £403,000. Dividends on the Deferred shares totalling 18s. 9d in place of 15s., the distributions called for £400,000, as against £340,000, leaving £116,500 to be carried forward, or £16,500 more than brought in. Capital expenditure (charged against revenue) amounted to £98,100, as against £76,600, the increase being accounted for by additions to the power plant and further accommodation for the workers. At 31st October the diamonds on hand stood at £462,000, in contrast with £403,000 a year previously, the increase being due to the decrease in trade during the last few months of 1912-13 caused by enhanced tax on precious stones entering the United States. Against cash asets totalling £912,300 there were £395,700 liabilities, leaving a balance of £516,600 including the trading fund of £300,000 and the emergency fund of £100,000, in both of which the Government has a 60 per cent. interest. As to the mine, shareholders will note with satisfaction the manager's statement that the area of the pipe remains unchanged. The 310 feet level has been opened up, and the quantity of ground available above it is reckoned to represent approximately 25,000,000 loads, or not very far short of two and a-half years' supply. A point of interest at the moment is that since rock drills were put into commission a saving of some 2,000 natives has been effected. During the greater part of the past year the trade in diamonds was booming, the demand for the United States being stimulated at one time by purchases in anticipation of the enactment above referred to. The Premier Board expresses the opinion that, "with a revival in trade, the diamond market is sure to improve." Having regard to trade prospects generally, the phrase reads a little curiously.

Total output to 31st October, 1913 :—

Date.	No. of loads washed.	Carats found.	Value of diamonds.
To 31st October, 1912	54.872.296	14,347,721	£12,623,175 16 6
Nov., 1912, to Oct., 1913	10,434,680	2,107,983	2,336,828 15 1
To 31st October, 1913 ...	65,306,976	16,455.704	£14,960,004 11 7

The following table gives a resume of results to date :—

Year ended	No. of loads washed.	No. of carats found.	Value of diamonds.			Yield per load.	Value per carat.			Value per load.			Cost of production per load washed.	
			£	s.	d	Carats.	£	s.	d.	£	s.	d	s.	d.
31st October, 1903	76,931	99,208¼	137.435	2	6	1·29	1	7	8·5	1	15	6·7	4	7·2
31st October, 1904	939,265	749,653½	866,030	0	5	·798	1	3	1·2	0	18	5·3	2	7·62
31st October, 1905	1.388,071	845.652	*994.667	5	7	·609	1	3	6·29	0	14	3·98	3	3·44
31st October, 1906	2,988,471	899,746	*1,277.739	6	4	·301	1	8	4·82	0	8	6·61	3	5·71
31st October, 1907	6,538.669	1,889,986¾	†1,702 630	19	8	·290	‡0	18	0·20	‡0	5	2·49	2	4·14
31st October, 1908	8,058,844	2,078.825¼	1,536.719	19	0	·258	‡0	14	9·40	‡0	3	9·75	1	10·24
31st October, 1909	7,517,793	1.872,136½	1,172,378	7	2	·249	0	12	6·29	0	3	1·43	1	11·42
31st October, 1910	9,331,882	2,145.832¾	1.496.641	5	5	·230	0	13	11·39	0	3	2·49	2	0·56
31st October, 1911	8.325,272	1,774.206	1,433.970	6	9	·213	0	16	1·97	0	3	5·34	2	2·02
31st October, 1912	9,707,098	1,992,474	2,004.943	3	5	·205	1	0	1·50	0	4	1·57	2	4·79
31st October, 1913	10,434,680	2.107,983	2,336,828	15	1	·202	1	2	2·06	0	4	5·74	2	6·67

*Includes Cullinan Diamond at nominal valuation. †Proceeds of Cullinan Diamond not included.
‡Subject to the loss on contract with Diamond Syndicate.

G.S.W.A. Co., Ltd.

The South-West Africa Company, Ltd., issues a circular giving in detail the assets, the most important being the cash and liquid assets of an aggregate value of £1,725,000. As the capital is only £1,750,000, the holdings in subsidiary companies, the mining rights, land and concessions are ignored in the quotation for the shares. The object of the circular is, however, not so much to point out the absurd quotation of the shares as to prepare shareholders for a legal fight in view of a "strangulation tax" which has been imposed. The German Government has decided to compel [illegible] other companies holding mining rights in South-West Africa to submit to the introduction of the Government ordinance in their respective territories. This is regarded as a penalising measure, and its validity is to be [illegible] have consulted one of the leading authorities on constitutional law in Germany, and they are advised that the Mining Concession Tax Decree is invalid on technical grounds.

Manicaland Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of December, 1913, is as follows:—Reef: Mill: Gold won (fine gold), 591 ozs. 3 dwts. 9 grs.; tons crushed, 1,995; value, £2,482 17s. 10d. Concentrates (estimated): Gold (fine gold), 16 ozs. 0 dwts. 5 grs.; tons, 7·25; value, £68 0s. 11d.; silver and lead value, £35 5s. 1d. Cyanide: Gold recovered (fine gold), *51 ozs. 13 dwts. 5 grs.; tons, 851; value, £216 18s. 11d. (*Note.—12·52 fine ozs., value £52 11s. 9d. over-declared by a producer in October and November.)

THE MANAGER AND STAFF OF THE NEW MODDERFONTEIN G.M. CO., LTD.

Top row (left to right). E. J. B. Cockredge (Change House Attendant), C. E. Peddie (Assistant Compound Manager), D. Dewar (Native Timekeeper), J. Quinn (Shift Boss), W. D. Duff (Assistant Assayer), C. H. Swales (Shift Boss), S. R. Fleischer (Assistant Assayer), N. Cohen (Assistant Sampler), J. Trenwith (Foreman Blacksmith), J. McGregor (Shop Foreman), G. N. Dence (Assistant Timekeeper), H. W. Green (Compound Clerk), J. W. Harkness (Foreman Electrician), R. H. Copeland (Electrical Engineer), A. Back (Assistant Sampler).

2nd row. M. C. Thompson (Construction Clerk), W. T. Fyfe (Assistant Storekeeper), F. W. Milligan (Storekeeper), A. G. McAlister (Assistant Surveyor), J. van Vooren (Shift Boss), E. J. Wiseman (Shift Boss), F. L. Ferguson (Shift Boss), F. S. Corris (Shift Boss), W. Hitchings (Construction Foreman), G. L. Hunter (Underground Engineer), L. R. Gaul (Assistant Surveyor), S. Curnow (Sampler), V. J. Pickerill (Assistant Native Timekeeper), S. Richards (Mine Captain's Clerk), F. N. B. Barclay (Native Gang Clerk), A. Madore (Assistant Surveyor).

3rd row. E. L. Matthews (Cyanide Overseer), P. Wilson (Assistant Sampler), A. F. Inglis (Battery Overseer), H. A. Burrow (Shift Boss), C. W. Marr (Foreman Mason), W. C. Robinson (Foreman Boilersmith), J. C. Mollison (Foreman Carpenter), A. Poustie (Outside Foreman), J. Bosman (Surface Overseer), P. Miller (Foreman, Drill Shop), G. R. Emerton (Engineer's Clerk), E. de Marillac (Assistant Sampler).

Seated. T. Duff (Compound Manager), J. S. Martin (Assayer), F. K. von Mengershausen (Surveyor), G. Chishold (Mechanical Engineer), H. T. Packard (Underground Manager), E. Miles Sharp (Manager), P. L. Edwards (Mine Secretary), S. S. Atkins (Manager's Assistant), J. E. Best (Mine Captain), G. Mabbett (Mine Captain), F. Jenkins (Mine Captain).

A. Marr (Junior), B. Nestadt (Junior), J. P. Marr (Assistant Native Timekeeper).

R. Olivier, Photo, 98 Pritchard Street.

THE YEAR WITH THE WOLHUTER.

Figures Compared—Better Profits Anticipated—Development Particulars.

The seventeenth annual report and financial statements of the Wolhuter Gold Mining Company for the year ending 31st October, 1913, to be presented to shareholders on the 27th of March have now been issued. Mr. D. Wilkinson remarks:

The results of the last year's operations are given in detail in your manager's report, and while confirming the same, I wish to draw your attention to some of the more important details. The following is a comparison of the profits for the last two years:—

	Tons milled.	Yield per ton.	Costs per ton.	Profit per ton.	Total Profits.
1912	347,050	27/8·6	17/4·5	10/4·1	£179,490
1913	340,950	26/5·0	18/2·9	8/2·1	139,399

The yield has averaged 1s. 3·6d. less, the costs 10·4d more, and the profit of 2s. 2d. less per ton; there has been a decrease of 6,100 in the tonnage milled, and a decrease in the total profits of £40,091 as compared with the previous year. The cost of mining has increased by about one shilling per ton, due chiefly to the more broken nature of the ground in the eastern section, which necessitated additional subsidiary development and also reduced the tonnage efficiency per employee in this section. The number of feet crosscut, driven, raised and sunk was 10,849, an increase of 310 feet, the result being an exposure of 330,763 tons having an estimated assay value of 6·1 dwts. over 54·5 inches. The assay value is practically the same as for the payable ore exposed during 1912, but the tonnage is 14,000 less. The Main Reef Leader, west of the deep level shaft, has shown consistently good values on all the lower levels, but the South Reef has been disappointing, and this is the main cause of a decrease in the total payable ore reserves of 48,877 tons. During the past year an additional 38-drill compressor was installed, which since July last has assisted materially in keeping the battery supplied, although native labour has been scarce. The auxiliary shaft from the 20th level in the deep level section was sunk 240 feet during the past year, and will be pushed ahead during this year for the purpose of developing the large area in the eastern portion of your property as quickly as possible. The capital expenditure during the past year was abnormally heavy, the main items being shaft sinking, a new compressor, an electric hoist for the auxiliary shaft, an increase in the number of slimes tanks, and alterations to the compound. During this year, the capital expenditure will be considerably less, the main item being the sinking of the auxiliary shaft. The capacity of the cyanide plant has been increased by the erection of additional slimes tanks, and with the tube mills running at their maximum efficiency, and also given stable industrial conditions, the tons milled should be greater, the costs per ton less, and the profits during this financial year should be substantially better than during the past year.

Mr. J. E. McGuire, the manager, reports, *inter alia*, that the total development footage for the year stands at 10,849 feet. Of this footage 9,041 feet have been sampled, averaging 5.7 dwts. over an estimated stoping width of 51.4 ins. Of the working costs (18s. 3d. per ton) 9s. 6.6d. was absorbed by "mining," and 2s. 0.2d. by "development."

BRAKPAN RESULTS IN 1913.

Working Profit £291,064—Ore Reserve Position—Development Results.

The Consolidated Mines Selection Company, Limited, with its usual promptitude, has issued reports of two subsidiary companies—the Brakpan Mines and the Springs Mines—bearing date January 24. The Brakpan report is something more than a quarterly report. It gives in tabular form the results secured quarter by quarter throughout the year, and deals also with the ore reserve position and with dividends. It may thus be taken as a forecast of the annual statement as to the year's work, and, accordingly, merits particular attention. In the first place the following comparative quarterly return of working expenditure and revenue account is worthy of some study:—

Period, 1913.	Ore Milled, Tons.	Gold Declared.		Working Expenditure.					Working Revenue					Working Profit.				
		Fine Ozs	Fine Dwts. per Ton Milled.	Amount.			Per Ton Milled.		Amount.			Per Ton Milled.		Amount.			Per Ton Milled.	
				£	s.	d.	s	d.	£	s.	d.	s.	d.	£	s.	d.	s.	d.
1st quarter ending 31st March	170,414	60,672	7·121	148,846	10	10	17	5·63	255,485	6	0	29	11·81	106,638	15	2	12	6·18
2nd quarter ending 30th June	163,309	55,002	6·736	153,261	17	5	18	9·23	231,524	3	2	28	4·25	78,262	5	9	9	7·02
3rd quarter ending 30th September	137,936	44,823	6·499	138,739	4	0	20	1·40	188,715	1	5	27	4·35	49,975	17	5	7	2·95
4th quarter ending 31st December	141,610	45,072	6·355	133,581	2	2	18	10·39	189,768	19	2	26	9·618	56,187	17	0	7	11·23
Totals and averages	613,269	205,569	6·704	574,428	14	5	18	8·80	865,493	9	9	28	2·71	291,064	15	4	9	5·91

In this statement no allowance has been made for Profits Tax. Compared with the 1912 operations the following variations are to be noted:—

	1912.	1913.
Working Profit	£441,117	£291,065
Dividends per cent. ...	40	32½
	£300,000	£243,750

The year's results have been affected by (a) subsidence of hanging wall in some of the most important stope faces in the early part of the year; (b) the July labour troubles; (c) less satisfactory developments in several important sections of the mine during some months of the year. The annual re-estimation of the ore reserve shows 2,242,000 tons of payable ore, the average assay value being 6.7 dwts., and the average stoping width 61 inches. The shortfall, as compared with last year's estimate, apart from the influence of milling, is the result of the unusually low percentage of payable development for the year; the relative ineffectiveness as to tonnage of the payable footage; and the usual recasting of previously included blocks in the light of further experience. The linear development for the quarter ending December amounted to 5,281 feet, of which 4,195 feet were on reef averaging 8.10 dwts. over a reef width of 35.15 inches. Of the footage on reef 2,146 feet were in payable areas and averaged 11.01 dwts. over 39.14 inches.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Kleinfontein Apex Benoni Amalgamation.

To the Editor, *South African Mining Journal.*

Sir,—As a holder of Apex and Benoni shares at a cost much in excess of present quotations, I wish, as far as the Apex is concerned, to protest against the scheme as set forth in the circular recently issued by these companies. I find that the Benoni Company is to receive in payment for its 355 claims, 31,540 Kleinfontein shares, and in addition the Kleinfontein Company makes itself liable for the Benoni's debt of £219,000. Taking the 31,540 Kleinfontein shares at 22s. 6d. per share, plus the debt of £219,000, it means that the 355 Benoni claims are to cost the Kleinfontein £254,482 10s., or fully £716 per claim. The price to be paid to the Apex for its 1,115 claims is 150,000 Kleinfontein shares, which, at 22s. 6d. per share, are worth £168,750, which means that the 1,115 Apex claims are to cost the Kleinfontein only £151 per claim. What is the reason of this great difference in claim value? Benoni £716 per claim, Apex £151 per claim. I find on reference to the last accounts of both companies that the payble developed ore, in each case, is, Benoni 537,475 tons of 6.43 dwts., Apex 496,438 tons of 6.18 dwts., really very little difference in quantity and value, and nothing to warrant such a difference in price per claim. From the Apex accounts I gather that that Company has spent on its gold section some £716,000, including £150,000 on shafts, £200,000 on development, and £168,000 on general equipment. The Benoni accounts do not make it clear what that Company has spent on these items, the cost of the same being lumped in with the property, but it is quite clear that it has not spent anything like £716,000. I am aware that the Benoni has a quantity of crushing and reduction plant which the Apex does not possess, I have no knowledge of the value of this machinery, but I do know that only quite recently a great portion of it was stated to be useless, and that it would require to be scrapped. Surely this plant cannot account for the great difference in price of the claims of the two companies. If the amalgamation goes through, as proposed, the Apex is to sell its 1,115 claims for an amount just about equal to the sum it has expended on its shafts, or for about £50,000 less than it has expended on development. In 1912, when a scheme for amalgamtion of the Benoni and Apex was considered, the Apex ground was taken as being fully three times as valuable as the Benoni ground, and the equipment of the Benoni was valued at only about £100,000 more than that of the Apex. The directorate of the Benoni bears a similarity to that of the Apex, certain members of the one being also members of the other, and this makes one wonder why such a good bargain has been got for the Benoni in comparison with the very bad bargain for the Apex. I would strongly recommend Apex shareholders not to forward their proxies to the directors in favour of the scheme, at any rate, not until some strong and sound reason is given for acceptance of the very low price at which the Board prop to sell the company's property.—I am, etc.,

J. M. ALLAN HAY.

Pietermaritzburg, 23rd January, 1914.

Native Labour Recruiting Methods.

To the Editor *South African Mining Journal*

Sir,—At one time there were quite a number of labour organisations, and these concerns allowed recruiters to make advances to native recruits and paid recruiters capitation varying according to which group owned the organization. Later on there was a big amalgamation in regard to labour organizations, and the result was the Native Recruiting Corporation, Limited; but two groups (the E.R.P.M. and Randfontein) kept up separate organisations. Before amalgamation the capitation fees varied considerably, and there was fairly keen competition for active recruits. After the amalgamation the Government began to tamper with the system of advances to boys by reducing the amount, and the Corporation also reduced the capitation fees payble to recruiters. The advances stood at £5 for some time, but the amount was reduced to £2. A big drought came on and the Government allowed the advances to be increased again—to £5. At the latter end of 1913 the Government notified that from the 1st inst. the advances could not exceed £2. The new order of things was scarcely in full swing when, without warning, the Government issued another notice doing away with all advances locally, except for Government taxes and individual fines (if a boy happened to be convicted). Within a few days of the publication of this notice people (merchants, traders, labour agents and others) took the matter up, with the result that the advance of £2 is, I believe, to be continued up to the 30th June next. Now I have been informed on very good authority that the mining people are behind the Government in trying to, not only abolish advances, but to blot out all labour agents, in the hope, no doubt, that native labourers will be induced to go to the mines "on their own." There are several points affecting the mines involved in this matter, and unwise tampering with the labour question spells "disaster" to the mine owner. As far as the Colonial Kaffirs are concerned, there will always be a large number who have to be "shifted," and these are the ones labour agents attend to. Then there are a good many natives who must have some monetary assistance before leaving for the mines, and deduct these two classes from the general body, the percentage going forward is small and will not be increased. In the Government notice last issued, it is provided for a native getting an advance of £2 as soon as he arrives at the mine; but this will not help the position at all, as the man wants the money before he starts, so as to be assured that his family is provided for, and perhaps some pressing debt paid. The erratic supply of natives from the Cape Province to the mines is due to the frequent and unbusinesslike changes in regard to recruiting. It is freely stated that the mines, practically speaking, dictate or suggest, the changes in recruiting conditions which Government notifies from time to time, and yet these same people are the only shareholders of and dictate the policy of the Native Recruiting Corporation. The Corporation moves heaven and earth to obtain recruiters, and then enters into agreements with them whilst the shareholders of it, by another channel, in spirit, break faith with the recruiters by inducing the Government to handicap them in every way. Some years back the mines endeavoured, by a wild-cat scheme, to induce boys to go to the Rand through particular salaried men, who were detailed to see to entraining, tickets and feeding, but the whole thing proved a failure from beginning to end, and every other scheme in that direction will be a failure. Apart from the actual advancing of money, etc., the labour agent of the present day does a lot for the recruited native—he receives his letters, has replies written for the family, provides stationery, stamps, etc., keeps the family informed of the boy's health, receives and pays out remittances, investigates all complaints. All of this a natives appreciates and he will not readily forego same for the disadvantages which would attend voluntary labour. I attribute the shortfall of labour, spoken of in the papers from time to time, to nothing else but the unsettled recruiting business. The disorganisation does not originate from the recruiters but from the other end. I predict quite a big slump in the supply unless the advance system (fair advance, say £5) is adhered to and the recruiters have some assurance that there will be permanency about the business. I am, etc.,

"RECRUITER."

Rhodesian Section.

LATEST MINING NEWS.

Latest Mining News—Rhodesian Asbestos—Output Anticipations—London and Rhodesian Company—A Globe and Phœnix Law Suit—Globe and Phœnix Developments.

THE accounts of the Rhodesian Asbestos Company, made up to 30th September last, show cash in hand and debtors £596, and various creditors £1,902. The directors' report, presented at the meeting on the 30th December, states that the company's undertaking is under option to the Charterland and General Exploration and Finance Company, Ltd., until the 31st December, 1915, the option price being an amount equal to 35 per cent. of the nominal capital of a new company to be formed to acquire the asbestos properties, such capital not to be less than £50,000 in shares of £1 each. In the event of the option being exercised, the purchase price would be paid in cash or (at the option of the Charterland Company) in fully-paid shares. No work has been done during the year, the isolation of the property by the continued closing of the roads to ox transport having rendered this impracticable. In July, 1913, 27 tons of fibre were shipped to England and sold at satisfactory prices. As the bulk of this shipment was representative of the low-grade asbestos, of which there are large quantities ready for winning, the outlook for dealing profitably with this class of fibre is appreciably enhanced, particularly in view of the fact that a railway from Victoria to Umvuma is now in course of construction, which, when completed, will enable transport costs to be reduced very materially, and, as hitherto these costs have been one of the principal obstacles in the way of making profits, the directors consider that the prospects of work being resumed on the property are favourable .

* * * *

The "Rhodesian Mining Review," in discussing the prospects for 1914, writes:—"Turning to the general prospects of the output for 1914, it is not difficult to forecast the date when a figure some 20,000 ozs. in advance of the present rate of return will be declared. The present yield is some 58,000 ozs. per month, and to this we may expect, in the next few months, the following additions: Antelope, 1,100 ozs.; Bell, 2,000 ozs.; Cam and Motor, 7,500 ozs.; Shamva, 12,000 ozs.; Falcon, 3,000 ozs.; total, 25,600 ozs. This addition to the present output would give a monthly total of 83,000 ozs. before the end of the current year, and it will be seen that the entry of these mines into the producing list will have a most important bearing upon the status of the mining industry generally. That increased attention is bound, as result, to be attracted to the country cannot be doubted, while there can be equally no doubt that the parent companies concerned, having been relieved of the anxieties and expense of bringing these large equipments into activity will be in a position to devote their resources more freely to the acquisition and opening up of fresh properties. In the circumstances we can take the most hopeful view of the prospects of the industry during the current year."

* * * *

The following cable was sent from the local to the London office of the Lonrho Company in mail week:—"Radnor, 300ft. level. Main west drive driven 10ft., total 40ft., assaying 1 oz. 7 dwts. per ton over 44ins. Winze below 300ft. level sunk 10ft., total 35ft., assaying 19 dwts. per ton over 47ins. East drive off south cross-cut 16ft. east driven 7ft., total 7ft., assaying 10 dwts. per ton over 47ins. Cross-cutting south 16ft. east driven 4ft., total 10ft., assaying 17 dwts. per ton over 42 ins., face at this point in country."

* * * *

The following shows the developments on the Globe and Phoenix Mine during the month of December, 1913:—Note.—The actual widths of the reefs, and the actual assay values are given, except where the width of the reef is below 30 ins. In these cases, as a minimum width of 30 ins. of rock must be removed for stoping, the value is given as the average for the whole 30 ins. width; e.g., if a 10 in. reef assayed 36 dwts., the average value over the stoping width of 30 ins. would be 12 dwts., and would be so stated. 11th level station reef drive north has advanced 8 ft.; average width of reef 4 ins., average value over 30 ins., 1 dwt. 12th level, drive north, No. 1 crosscut east, No. 1 winze, has advanced 7 feet.; average width of reef 20 ins., average value over 30 ins., 5 dwts. 14th level drive south on east portion has advanced 70 ft. Average width of reef 10 ins., average value over 30 ins., 19 dwts. 14th level drive north from main shaft, prospecting has advanced 21 ft.; average width of reef 13 ins., average value over 30 ins., nil. 15th level drive south on east portion footwall reef has advanced 83 ft.; average width of reef 5 ins. average value over 30 ins. 6 dwts. 19th level east portion, No. 3a winze, has advanced 24 ft.; average width of reef 78 ins., average value 121 dwts. 20th level, drive north from No. 2 winze, 19th to 20th levels, has advanced 85 ft.; average width of reef 17 ins.; average value over 30 ins., 54 dwts. 20th level, No. 2 winze north, 20th to 21st levels, has advanced 50 ft.; average width of reef 16 ins., average value over 30 ins., 1 dwt. Vertical shaft: total depth, 1,680 ft. Cross-cutting for the month, 42 ft.

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AN IMPORTANT EAST RAND ENTERPRISE.

The Fire Clay Company of Boksburg—A Progressive Local Industry.

Amongst the subsidiary industries of the Witwatersrand few have sprung into greater prominence during the past few years than brick making, and particularly the industry of fire brick making. With the expansion of mining there has come an extension of power plants, and in the construction of brick supports for these the best local material and workmanship has been called for. It should be a source of gratification to the country at large to learn that local firms have given a wholly satisfactory response to the call for furnace bricks and that there is now being turned out on the Rand a brick which in point of cost, durability, and fire and acid resisting qualities, compares most favourably with the manufacture of any country in the world. The growth of the great Victoria Falls and Transvaal Power Company enterprise, with its huge boiler installations, has been one very material factor in the building up of the fire brick trade. In this connection, it is of interest to note that the whole of the brick work for the new extensions of the Victoria Falls Company's Babcock-Wilcox marine type boilers at Simmer Pan and Rosherville has been supplied by the Fire Clay Company of Boksburg to the order of Messrs. Reunert & Lenz, contractors for these extensions. The Fire Clay Company has, in fact, an annual contract with the Victoria Falls Company for the supply of furnace bricks for all their stations, viz., at Brakpan, Simmer Pan, Rosherville and Vereeniging. The Fire Clay Company has now been supplying the Victoria Falls Power Company for three years, the bricks of this Boksburg concern having been chosen on account of their durability and resisting powers against great blast and a constant heat of about 2,500 deg. Fahrenheit. In addition to the Victoria Falls Company, the Fire Clay Company is supplying fire bricks to the South African Railways at Port Elizabeth, Durban and East London, the Johannesburg Municipal Destructors, the Municipality of Maritzburg, the Messina Copper Company (furnaces and other plant), and to mines generally. The property of the Fire Clay Company consists of 48 base metal claims situated to the east of the township of Boksburg North and is intersected by the main Boksburg-Benoni railway line. There is here a seam of clay lying on top of the coal measures which has been found admirable for the making of bricks and particularly fire bricks. The seam varies in consistency as between its lighter and upper portion and the more compact argillaceous strata in the bottom of the open pit, from which material is now being drawn. Clay is hauled from the pit to the grinding and pugging equipment which is now operated by two 25 h.p. boilers connected together, and will in future be driven by 100 h.p. boiler now

The Fire Clay Company, Boksburg: General View of Works.

In the Clay Pit.

on the ground and ready for erection. On arrival at the top of the pit the material is dumped into a perforated 11 ft. grinding pan with 2½ ton rollers. The material after grinding is dropped into a pit and elevated by bucket elevators to a double circular trommel where it is sized and sifted. The coarse material is returned to the pan for regrinding, whilst the fine stuff passes into a double mixer where it is mixed with water. The product from the mixer then passes through two sets of rolls and is then again pugged and mixed and is afterwards employed in the construction of hand or machine made bricks as the case may be. There are four kilns on the property where the bricks are burnt, and the resulting product has been found to produce excellent types of bricks suitable for a number of purposes, the types varying according to the material employed and their subsequent treatment and moulding. All sizes and shapes are turned out from slabs to bricks three and four feet long, and from the "common or garden" article to cupola shaped bricks for furnace arches, etc. The greater part of the trade of the company consists in the supply of fire bricks. In these there is a high percentage of silica ranging from about 75 per cent. to 95 per cent. in the case of a number of bricks tested for the Messina Copper Company's smelting and roasting furnaces. The company also supplies ordinary furnace bricks containing about 45 per cent. of silica, special bricks for lead smelting and a hard blue brick eminently suitable for the mining of circular shafts, where a brick which is impervious to acid and water is demanded. The varying demands of customers may be further exemplified when we state that the B.S.A. Explosives Company require a special acid resisting brick, whilst other particular types are supplied to chemical works, municipal destructors, and locomotive furnaces. In the making of these bricks, in the mixing of material in exact proportions for different types, in the sizing and shaping, and in the drying of the bricks, great technical skill and experience are called for, and judging by the large and important contracts secured the management of the Fire Clay Company understands the technique of these matters to a nicety. It may be mentioned that in the case of the bricks supplied to the Victoria Falls Power Company that these are sized down to a sixteenth of an inch, and it may also be remarked that in the down draft kiln the bricks are taken up to an extreme heat of 1,900 deg. Centigrade. Analyses of the seam of the Fire Clay Company at Boksburg and of the bricks manufactured compare most favourably with the analyses of the well-known English brick works of Brierley Hill and Stourbridge as the following table shows:—

One of the Company's Kilns.

	The Fire Clay Co.		English Works.	
	Brick.	Boksburg (Clay).	Stourbridge (Clay).	Brierley Hill (Clay).
	%	%	%	%
Silica	61·3	58·92	65·10	48·55
Combined water ...	·10	10·20	9·86	10·67
Iron (as Fe_2O_3) ...	·40	·04	1·92	4·06
Alumina	35·8	28·76	22·22	30·25
Lime	1·2	1·4	·14	1·76
Magnesia	·57	·79	·18	1·91
Alkalies	·21	·19	·18	—

It is to be noted that in the case of the Fire Clay Company's material the analysis shows a remarkable freedom from iron as compared with the products of the English works. The whole of the Fire Clay Company's property is clay bearing and is certainly to be reckoned an important industrial asset of the country, the more so as there is undoubted scope for the extension of the business in the direction of making crucibles and various kinds of pottery.

A Large Stock of Bricks on the Fire Clay Company's Property.

UNION MINERAL OUTPUT FOR DECEMBER.

Decrease of £48,453—Year's Total Output, £40,796,228—Coal Output, £2,216,944.

THE statistics of the Union mineral output for December, supplied by the Mines Department, show that the total value was £3,116,511, compared with £3,164,964 for November, a decrease of £48,453. The decrease for November as compared with October was £268,828. The total value of minerals for the past year was £40,796,228, of which gold accounted for £37,374,553, silver for £115,822, coal for £2,216,944, and base minerals other than coal for £1,088,909.

The returns for the last twelve months in quantity and value are:

	Value.
Gold (8,798,712 ounces)	£37,374,553
Silver (952,596 ounces)	115,822
Coal (8,800,216 tons)...	2,216,944
Base minerals other than coal	1,088,909
Total value	£40,796,228

Details of the December output are:—

GOLD.

The following table shows the number of mines working in the various districts declaring gold, and the district outputs for December. Decimals are omitted:—

	No. of mines.	Stamps.	Tubes.	Output. fine ozs.
Witwatersrand ...	52	9,155	278	640,334
Heidelberg ...	3	105	2	7,310
Klerksdorp	3	69	2	3,271
Ottoshoop	1	5	—	12
Barberton	11	187	3	7,011
Pilgrims Rest . .	14	149	5	13,318
Pietersburg .	2	20	—	335
Totals for Transvaal.	86	9,690	290	671,593
Totals for Cape ..	—	-	—	3
Totals for Natal ..	—		—	52
Totals for Union ...	86	9,690	290	671,648

COAL.

The following is a summary of the operations of the coal mines during the month:—

District.	No. of Collieries producing.	Tons mined.	Tons Coal sold.	Value per Ton. Pit's mouth. s.	d.
Springs-Brakpan . .	4	55,699	38,108	5	1·29
Middelburg	15	422,834	365,713	4	4·36
Other areas . . .	9	69,814	65,110	4	0·13
Totals for Transvaal	28	548,347	468,931	4	4·50
Totals for Cape . .	8	5,857	4,823	11	1·56
Totals for O.F.S	5	61,001	52,232	5	8·13
Totals for Natal	20	305,271	231,410	5	11·84
Totals for Union	61	920,476	757,396	—	

COPPER AND TIN.

The output of copper and tin mines for December was.—

COPPER.

	Tons.	Shipments.
Transvaal	930	£17,788
Cape	1,205	—
Totals for Union	2,135	£17,788

TIN.

	Tons.	Shipments.
Transvaal	397	£37,640
Cape	2	974
Totals for Union	399	£38,614

OTHER MINERALS.

The sales and shipments of minerals other than gold, coal, copper, and tin, were:

	Tons.	Value.
Asbestos	76·460	£1,252
Graphite	3·302	83
Magnesite	47·000	129
Lime	4,551·000	6,770
Flint	29·000	197
Silver in gold bullion (ozs.) ...	70,064·006	8,503

ACCIDENTS.

The total number of separate accidents in the Transvaal for December was 212, and in the Union 275.

Rooiberg Minerals Development Co.

The profit of the Rooiberg Minerals for the quarter ended 31st December, 1913, was £17,169 9s.; capital expenditure being £3,012 17s. 10d. The principal features for the quarter are:—(1) The discovery of an extensive body of payable ore on a bedding plane off the National Lode, 63ft. level. (2) The disclosure of payable ore in No. 6 raise on the Union Lode Drive North, 310ft. level. (3) The decline in size and values of the pipes and pockets off the Union Lode, above the 110ft. level. *Exploration and Prospecting.*—At the south end workings a strong fissure, carrying payable values, has been located and intersected at the 50ft. level, off No. 25 shaft. This lode bears a strong resemblance to the Union Lode, and has the appearance of permanence in depth. At the Camp workings the ore pipes previously located have been further followed up and opened. At the intermediate workings results have been satisfactory, and prospects continue favourable.

MINING MEN AND MATTERS.

Sir Abe Bailey has left the Rand on his return to England.

* * * *

Sir Lionel Phillips is sufficiently recovered to be able to be out again this week.

* * * *

Mr. C. L. Houseman, M.I.Mech.E. and S.A.I.E., has opened as a Consulting Mechanical Engineer at Bulawayo.

* * * *

Owing to Martial Law being in force, the eighteenth annual general meeting of members of the Geological Society of South Africa, convened for Monday, 26th January, 1914, at 8.30 p.m., has been postponed till further notice.

* * * *

Mr. J. N. Bulkley has resigned from the position of Consulting Electrical Engineer to the General Mining and Finance Corporation, and is returning to the United States. The splendid electrical equipments of the various mines of the Albu Group will remain a lasting monument to his great skill and ability.

It is notified that His Excellency the Governor-General has been pleased to approve of the appointment of Mr. Henry Cecil Fleischer, Registrar of Mining Titles, as Acting Under-Secretary for Mines and Industries, during the absence on sick leave of the Under-Secretary, with effect as from the 23rd January, 1914.

Swaziland Tin.

The following are the particulars in regard to operations for the month of December, 1913:—Concentrates recovered, 31·13 long tons; estimated profit (taking the price of tin at £168 per ton), £846.

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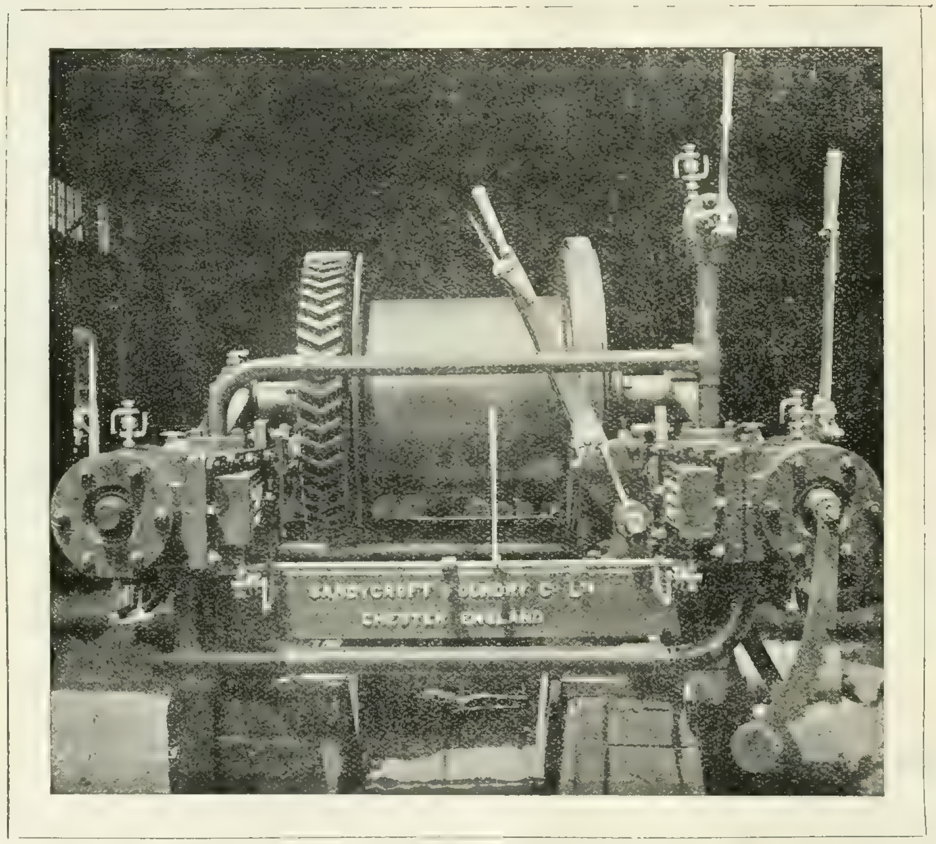

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Engineering Notes and News.

PERMANENT AND WATER-TIGHT SHAFT CONSTRUCTION IN EUROPE AND THE UNITED STATES.

TIMBERED shafts are comparatively cheap, especially where timber is as abundant as it has been in many of the mining regions of the United States, and other methods of shaft construction are practically unknown in that country. In Europe, and in this country, under different conditions, construction of a more permanent character is found economical. In some cases brick is used as a shaft lining, and when the ground is very wet, and it is cheaper to exclude the water than to pump it out, cast iron plates, sometimes two and one-half inches thick, are employed. Some of the recent shaft construction in America is noted in a paper read before the Engineers' Club of Philadelphia by Francis Donaldson. The paper is published in the October number of the club's proceedings. After describing European practice in some detail, Mr. Donaldson continues in part as follows:—

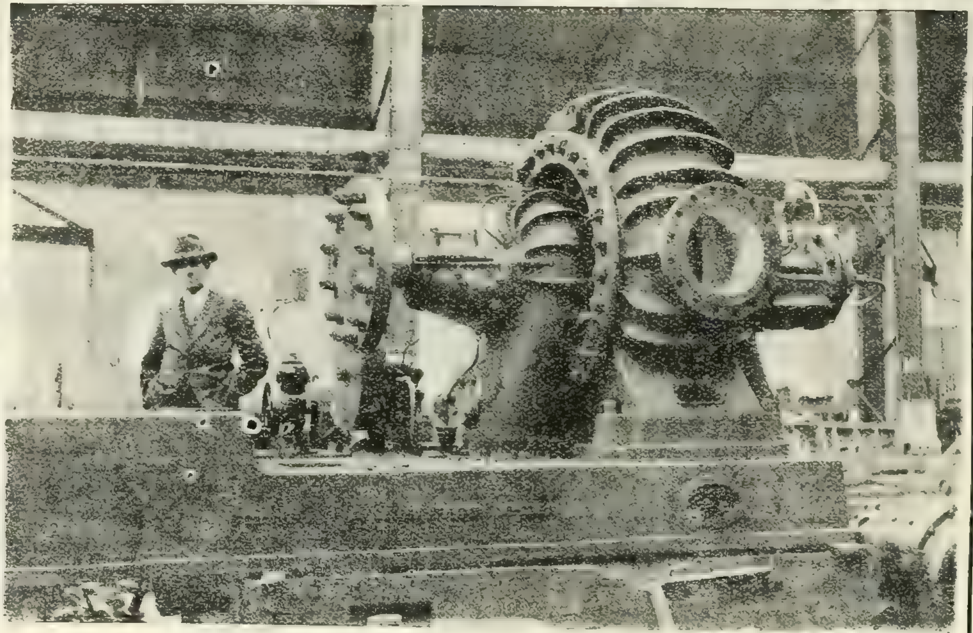
Brick or cast iron linings will not wear out, are safe against fire, and in a long-lived mine are cheaper in the end than less permanent linings. On the other hand they call for a circular shaft, and in a shaft with several compartments rectangular construction is much more economical and includes less waste space than any other. In Europe the development has been largely due to the geological conditions. The Europeans have been forced toward their methods by the fact that the coal and the minerals are all deep down; they have had to go down through great depths of marl and limestone. Ninety per cent. of the total footage of shafts in this country is in solid rock, and our problem is to meet the European requirements of safety, permanence and the exclusion of water without going to the great expense that they are put to in lining.

In pursuance of this idea a number of mining companies in this country have sunk shafts and lined them with concrete. The United States Coke and Coal Company were the pioneers, and they sunk two elliptical shafts in West Virginia about 200 feet deep and lined them with concrete. About three months after the mine started operation there was an explosion which wrecked the mine and killed eight or ten people, but the shafts were not injured in any way, and the operation of the cages was not stopped for an hour. They were able to go right ahead and proceed with their work of rescue and the rehabilitation of the mine itself.

It is only lately that the European requirement for the exclusion of water has been met, and that has been done on the Catskill Aqueduct. The condition has been met by cement grouting. The T. A. Gillespie Company had a contract for the Rondout Siphon, which was a deep circular pressure tunnel under the Rondout Valley. The tunnel was about five miles long, and it was expected that they would meet considerable water. They did not, however, except in one shaft which was put down in a fault between limestone and conglomerate; great quantities of water were encountered here. This shaft was sub-let to a Pennsylvania contractor; he struck about 1,500 gallons of water per minute, put in all the pumps he could get, and could not do anything with it. The shaft had reached a depth of 350 feet when it stuck. There had been a lot of water coming in on the side of the shaft—a rectangular construction shaft, by the way, lined with timber—and when the sinkers struck two or three more fissures in the bottom and got still more water it was the last straw, and it broke the back of the pumps. Mr. John P. Hogan, a division engineer of the board of water supply, then suggested that cementation be tried, and it was tried there for the first time in this country. The shaft was full of water, so they put in a platform as low as they could, installed a diamond drill, and drilled six 90-foot holes in the bottom of the shaft. They pumped them full of cement grout, forcing it through the diamond drill casings. Before they went much further they encountered another leak of about 750 gallons a minute; as they drilled the bottom the water poured in through the machine drill holes they were going to shoot. So they simply plugged up those holes, then removed the plugs one at a time, drove in pipes connected to a grouting machine, pumped grout into the holes, and cut the water off that way. By that means they were able to reduce the flow until they could put in a permanent pump station and handle the water.

The question of a water-tight lining brings up the shape of the shaft. The shaft with the maximum area and the minimum lining is of course circular, and this is by far the cheapest shaft to sink. That was brought out on the aqueduct. All the construction shafts at first were made rectangular and lined with timbers, while the waterway shafts were made circular. On the Rondout Siphon shafts we started out with the idea that the rectangular shafts would be easier than the circular, but it was the other way. When we started the first circular shaft we did not do much the first month. The last month we made 138 feet. The next siphon we moved to we had the same gang, and they knew how, and jumped the progress up to 170 feet in one month in shale. The same gang was then moved across the Hudson River to a granite shaft, and we made 183 feet, which is the American record.

The way it was done is this: The drilling is all done on one shift. Enough drills are put into the shaft, so that all the holes in the round can be drilled and the sump loaded and shot in eight hours. The other two shifts clean out the shaft and get it ready for the drilling shift the next morning. We drilled 33 holes to a round. The same method is used in South Africa on rectangular shafts, but in this country it has not been successful in rectangular shafts. I personally have tried it in four shafts, and it would not work. However, in circular shafts we tried it and made it work. I mentioned the rectangular construction shafts being slower to sink than the circular. In South Africa they hold the world's record for sinking, and the shafts there are rectangular. In this country most rectangular shafts are about 12 feet by 26 feet, and about ten to twelve men are carried on a shift. There will be two or three drill runners, three helpers, and about six muckers. In South Africa they use 35 to 40 men on a shift in a shaft of the same size. I was talking to a man from South Africa who had been engaged on some of this sort of work out there, and I asked him how he could get so many men in. He said they use Kaffir labour. These Kaffirs wear no clothing to speak of, and the temperature gets up to a great height with thirty or forty men all bunched together; they sweat, and their greasy bodies just slide past each other without any trouble. He said that the smell



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down there is so strong that when a little bit of rock is dislodged it just shoots right up out of the top of the shaft of its own accord.

Wherever the entire area of a circular shaft can be used, as for ventilation, a circular shape is best. Where this is not practicable, as in a hoist shaft with several compartments, the best plan is to cut the ends off the ellipse adopted by the U.S. Coal and Coke Company and make a compromise between an ellipse and a rectangular out of our circular arcs. In dry or moderately dry rock the concrete lining need not be over 15 inches to 18 inches thick, but in wet and seamy rock it must be thick enough to resist the hydrostatic pressure after the shaft is lined. In New York City lately the contractors have been putting in as high as 25 to 30 feet of concrete in a day in a 14-foot circular shaft, and in six days, including getting started, putting the forms in and taking them out again, they, will put in 100 to 120 feet. The cost of a concrete lining is greater than the cost of a timber lining by just about the cost of the cement. As a rule, concrete outside the cost of the cement can be put in for the price of the timber; you have to pay for your cement and you have a permanent lining. By a comparatively small expense and proper preparation, it is possible to make a water-tight shaft and a safe shaft with no delay; we do away with the expense and danger of handling big quantities of water from shafts while they are being sunk, and we do away with the heavy fixed expense of pumping after the mine is completed.

Four additional sets of steam turbines and generators, of a total of 48,000 k.w. capacity, and three 7,500 h.p. steam turbine-compressor sets, have recently been ordered from the A.E.G., of Berlin, by the Victoria Falls and Transvaal Power Company.

Situations Vacant.

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The Electrical Problem.

Dealing with electrical developments, Mr. J. A. Robertson, chairman of the Scottish Local Section of the Institution of Electrical Engineers, in his inaugural address remarked that the gas-producer engine could be operated with almost any kind of coal, and it had a thermal efficiency considerably better than the steam turbine, although rather less than the Diesel engine. If it were possible to increase the range of temperature and construct compound or triple-expansion gas engines, a much higher efficiency could be obtained, but the mechanical difficulties were enormous, and the limit at present seemed to be single-stage engines of 4,000 h.p. There has been a tendency of late in certain quarters to decry the backward state of the electrical industry, which was attributed to (1) the restrictive legislation imposed by Parliament on private companies, and (2) the fact that the bulk of electric-supply undertakings in this country were in the hands of local authorities. He did not agree with either of these views. The ultimate solution of the electrical problem, he thought, would have to come from a scheme drafted on broad and rational lines. Such a scheme was at least as important as the telephone service, and would justify the appointment by the Government of a Commission of experts to investigate and report on the whole subject.

Mining Examinations.

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Finance, Commerce, and Industries.

New Competing Line.

The South African Railway Administration notify that "the opening of the Piet Retief-Vryheid line, which has just taken place, will have the effect of readjusting the respective trade spheres of influence of Durban and Delagoa Bay in the Eastern Transvaal, as the new line brings Durban into much closer communication with the Eastern Transvaal than hitherto. The new line will also render it possible for coal mines in the vicinity of Ermelo and Piet Retief to despatch coal to the Port of Durban at greatly reduced rates, compared with those prevailing prior to the opening of the new line."

* * * *

Advice for the Union Government.

The South African section of the London Chamber of Commerce is an optimistic body that believes it can move the Union Government by counsels of perfection. Last week it made certain recommendations for the purpose of encouraging the emigration of whites to South Africa. The recommendations were five in number, as follows:—(1) The Union Government should increase its advertisement of South African Railways and the facilities of travel, and should extend these advertisements to the Continent of Europe and the United States. (2) The Union Government should enlarge its agricultural colleges in South Africa. (3) The Union Government should publish extensively the provisions of the Land Settlement Act, 1912. (4) The Trades Commissioner's office should be placed in a more prominent position. (5) By watering and irrigation, the Union Government should render more land available. Most of these proposals will sound fairly familiar to the Union Government.

* * * *

Union Building Activity.

Nine municipalities in the Transvaal Province during the month of December approved plans having an estimated value of £84,614, as against £101,013 for the month of November, showing a decrease of £16,399. Eight municipalities in the Cape Province approved plans having an estimated value of £36,403. Bleomfontein Municipality passed plans having an estimated value of £4,735. The Durban Municipality passed no building plans during the month. The following are estimated values of buildings the plans of which have been approved by the undermentioned Municipal Councils for the month of December, 1913:—Johannesburg, £62,089; Benoni, £2,570; Boksburg, £800; Germiston, £4,310; Krugersdorp, £2,695; Potchefstroom, £100; Pretoria, £8,200; Roodepoort, £300; Springs, £3,550; Sea Point, £2,910; Capetown, £14,855; Woodstock, £2,875; Maitland, £169; Mowbray, £115; Rondebosch, £750; Claremont, £400; Kalk Bay, £5,230; Carnarvon, £1,400; East London, £7,699; Bloemfontein, £4,735; total, £125,753. Tenders accepted by Government for public buildings during the month, and not included in the above amount, £67,240.

* * * *

South African Tobacco.

Mr. T. E. Elgin, Government Tobacco Warehouse Expert, of the Tobacco and Cotton Division, Pretoria, contributes to the *Agricultural Journal* an interesting article on "Tobacco Warehouse Management," in the course of which he states:—The tobacco plant thrives in many parts of the world, and tobacco has become one of the principal exports of some of the great agricultural countries. Revenue collected as excise and import duties enrich the treasuries of many nations, while the tobacco consuming public purchases each year approximately 2,000,000,000 lbs. of this commodity. Tobacco is a source of income to many farmers in South Africa, and the area under cultivation is being extended. In South Africa, however, we produce only 1 lb. out of every 145 lbs. of the world production of tobacco. Imports of leaf and manufactured tobacco into South Africa show but little decrease each year, which indicates that the consumption of the better grades of leaf in this country is increasing as rapidly as the production. There is no more important part of the warehouse business than that of selling the tobacco. An important point is to inspire confidence in the buyer by convincing him that he will receive fair treatment, and that when he gives an order the goods will be delivered according to contract. The salesman can also advise farmers to grow such grades of leaf as the trade demands. In considering a business, the first question which is usually asked is, "Does it pay?" In South Africa at present there is only one tobacco warehouse conducted on the co-operative plan. Tobacco delivered to this warehouse for the past two years was settled for at full market prices, with no expense to the farmer. By reference to the report of the auditor for the year 1912, we find that the gain in value of the tobacco handled in the co-operative warehouse was sufficient to pay all expenses of the business and still leave a balance of more than £6,000 net profit to the co-operative society. It would be well for all tobacco growers in South Africa to consider whether or not it pays to operate a co-operative warehouse.

* * * *

Railways and Rand Industries.

The evidence submitted to the Economic Commission by the Johannesburg Master Builders' Association has been issued to the Press. The statement was accompanied by several maps, which show the profit and loss on the South African railways and harbours for the years 1910, 1911 and 1912. At the outset the Association associates itself with the evidence submitted on behalf of the National Federation of Building Trade Employers in South Africa, which was handed to the Commission at Durban by the President (Mr. Albert F. Turner). In submitting this evidence, the Association emphasises that, unless certain alterations are made, particularly in the railway tariffs, the industrial area of the Central Transvaal cannot possibly find means for the establishment of industries which might and should be worked within its own areas. It is, therefore, necessary in the evidence which we present to treat as the groundwork of our claims the situation and standing of certain industries at present dormant, on account of these railway rates, and which cannot possibly progress unless they receive more equitable treatment from the Union Government, as the Act of Union debars any competitive railways being established either by private individuals or by Provincial Governments. On this, therefore, hinges the economic progress of Johannesburg, and this must be dealt with fully and sympathetically, as, in our opinion, it is the primary question that requires attention if industries are to be effectively established within the area of the Central Transvaal. As to the general causes affecting the cost of production in other industries as well as in the steel trade of the Witwatersrand, they are summarised by the Association as follows:—(1) The general

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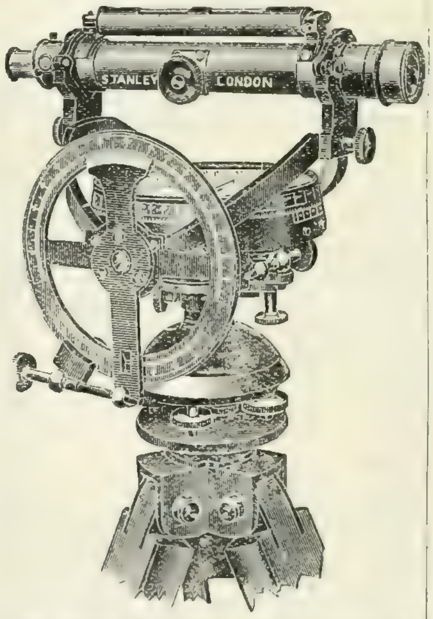
high transport rates on all goods to the competitive areas. (2) The huge profits on main trunk lines serving the competitive area from the coast. (3) Neglect of the natural law which governs the freights of competitive railways. (4) Cumulative charges for municipal services, *i.e.*, rates, taxes, power, also rents, etc., caused by high transport rates in the initial stage of construction and high railway profits, which rates for goods carried under Class 2, viz., £5 per ton, from Delagoa Bay are still the same as charged prior to the war, despite a reduction in mileage from 395 to 366. (5) Limit of area for disposal of goods manufactured here, as raw material has to be brought and re-transported, against the direct transport enjoyed by the coast and the importer. (6) Continuity of employment (establishment charges being fixed) would mean economy on manufacture, but local factories are now only employed fulfilling urgent orders, and the best labour effect can only be obtained by continuous employment under competitive conditions. (7) On the Witwatersrand white skilled labour is solely employed as skilled artisans, which means a necessarily higher rate of wage than that given to coloured artisans, the requirements and tastes of the European workman being naturally on a higher scale. (8) Additional charges in the labour areas of the Witwatersrand for pass fees for native unskilled labour of 2s. per month, as against 1s. in other areas and nil in rural districts. (9) The imposition of the annual contribution of £455,496 to the Consolidated Revenue Fund. (10) Higher railway rate charges on imported goods after paying duty; for example, sugar, wheat and flour. (11) Higher charges on inland manufactured goods in comparison with those of the Cape Province and Natal. In conclusion the Association says: On the foregoing factors we respectfully base our case as sufficient argument that before the economic conditions of the Central Transvaal as a manufacturing centre can be improved the cost of transport must be materially reduced. It means, briefly, a system of taxation before production, which, to our minds, is one of the worst forms of taxation. We have particularly noted structural steel industries on the Witwatersrand, being convinced that with fair treatment this is capable of great expansion, from which other trades, including our own, must in the end greatly benefit. We have to point out that from east and west of the Reef there are no less than, roughly, 600,000 tons of steel work, on which the average of at least £4 per ton has been expended in white labour, and our share on this amount of money amounts to a very small percentage only. This taxation before production affects the greatest industry in South Africa to a marked degree, inasmuch as it prevents development, adds considerably to the cost of working of all mines, and practically debars the working of low-grade mines. Briefly, we believe that we have submitted substantial facts in favour of an alteration which will beget prosperity in the future to Johannesburg and in a very marked degree tend towards the general prosperity of the whole of South Africa.



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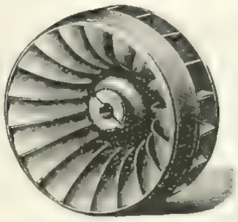

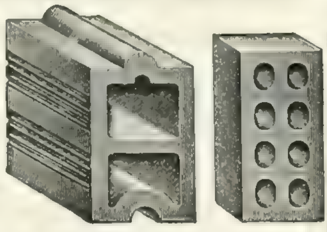

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THE WEEK IN THE SHAREMARKET.

Firmer, with Increasing Activity—London and Paris Buying.

THE market continues to reflect the accession of confidence and stability due to the firm attitude of the Government. The events of the week have, if anything, strengthened that feeling, and a new note of optimism is plainly discernible through every department. Native labour is said to be coming in satisfactorily, and the mines are settling down to steady, hard work, as they have not settled down since the beginning of our labour troubles. The first days of the week saw much activity, and advices from London all told of renewed interest in the South African market. On Thursday a slight reaction took place, profits were taken, and it looked as if the rise had been too precipitate. Friday, however, saw a stronger market, and it then became apparent that the improvement had come to stay. The big Far East Rand stocks are conspicuous in the van of activity, and they are followed by several of the low-priced Rand shares that only a little while ago were almost unsaleable. Syndicates are naturally, momentarily, in the shade, and tin shares have not yet been caught by the tide of returning public favour. At any rate, a good, active general market now seems assured.

	Fri., 23rd.	Sat. 24th.	Mon., 26th.	Tues., 27th.	Wed., 28th.	Thurs. 29th.
Adair-Ushers	0 3*	0 3*	0 3*	0 3*	0 3*	—
African Farms	15 3*	15 6	15 6	15 9	15 3*	15 1
Afrikander Props.	—	—		20 0†	20 0†	—
Apex Mines	18 6*	19 0	18 9*	19 9	19 9	19 3
Aurora Wests	6 6*	—		8 0*	—	10 0†
Bantjes Consolidated	13 0*	—	14 3*	15 0	15 9	15 3*
Benoni Consolidated	2 0	2 3†	1 11*	2 0*	2 0*	
Brakpan Mines	51 6*	52 3*	52 3*	54 3*	53 0*	—
Breyten Collieries	26 0*	26 0*	26 0*	28 9*	29 6*	29 6*
British South Africa	—	18 9*	20 6*	20 9*	20 6*	20 0*
Bushveld Tins	0 8*	0 8*	0 10	1 0	1 0	—
Cassel Collieries	—	12 0*	12 6*	12 6	—	13 0*
Cinderella Cons.	5 9*	6 0*	—	7 6†	—	—
City and Suburbans	43 0*	43 0	43 3	43 9	44 0	43 6†
City Deeps	55 6	56 9	57 0	58 0	58 0	58 3
Cloverfield Mines	5 6	5 9	6 0†	6 0	6 0	5 6*
Clydesdale Collieries	8 0*	8 0*	8 0*	8 0*	8 0*	
Cons. Gold Fields	42 6*	45 0*	49 0*	—	—	—
Cons. Investments	19 0*	20 9	20 6*	21 0	20 9	
Cons. Langlaagtes	28 0*	28 0*	29 9	30 6	30 3*	29 6*
Cons. Main Reefs	17 3	17 6	17 9	18 0*	18 3	18 0*
Cons. Mines Selection	8 6*	9 0*	10 6	10 6	—	—
Coronation Collieries	—	—	—	15 0*	—	—
Coronation Freeholds	0 5	0 4*	0 6	0 8	0 6*	0 7
Coronation Syndicates	4 0*	4 0*	4 0*	4 0*	4 0*	
Crown Diamonds	7 6*	7 6*	7 6*	—	7 9*	7 9*
Crown Mines	—	121 3*	122 6*	123 9*	—	—
Doornhoek Tins	3 6*	—	5 0†	—	4 0†	
East Rand Centrals	8 6*	8 9*	8 9	9 3*	9 6*	9 0*
East Rand Coals	1 9*	1 9*	1 9*	1 9	1 9*	1 11†
East Rand Deeps	2 0	1 11*	2 3	2 3*	2 3	2 3*
East Rand Props.	41 0*	41 9*	42 6*	42 6*	42 6†	39 0*
East Rand Debentures	—	—	£85*	£85*	£85*	£85*
Eastern Gold Mines	1 5	1 6*	1 6*	1 7*	1 6*	—
Ferreira Deeps	—	40 0*	42 6*	45 0*	—	—
Frank Smith Diamonds	6 6	6 4	6 0*	6 1*	6 6	6 4*
French Rands	—	—	1 6*	1 9*	—	—
Geduld Props.	23 0*	24 9	25 0	24 9	24 0*	—
General Minings	10 3*	—	10 6*	11 0*	—	—
Glencairn Main Reefs	2 0*	2 0*	2 0*	2 3*	2 0*	2 0*
Glencoe (Natal) Collieries.	—	6 6*	6 6*	—	—	6 0*
Glynn's Lydenburgs	14 0*	—	17 0†	14 6*	15 0†	15 0†
Goerz & Co.	—	—	10 0*	10 6*		
Government Areas	19 0	19 3	19 3	19 3	19 6*	20 0
Jumpers	3 0*	4 0*	5 0†	3 6*	—	—
Jupiters	5 6*	6 0	6 0*	6 0*	6 9	6 0*
Kaalfontein Diamonds	0 6*	0 6*	0 6*	0 6*	—	—
Klerksdorp Props.	2 0*	2 0*	2 3	2 4*	2 3*	2 5*
Knight Centrals	8 0	8 9*	8 6	8 11	9 3	8 9*
Knights Deeps	30 3*	—	—	30 0*	30 0*	30 0*
Lace Props.	3 9	3 8	3 7	3 8*	4 3	4 1
Luipaardsvlei Estates	9 0*	9 6*	9 6*	9 9	10 0*	10 0*
Lydenburg Farms	3 0*	3 0	3 1	3 0*	3 1*	3 0*
Main Reef Wests	8 0	8 6	8 6	10 0	12 0	11 0
Meyer and Charltons	—	103 9*		—	—	—
Middlevlei Estates	1 6	1 4*	1 6	1 4*	1 6	1 0*
Modderfontein B.	78 0	80 0	79 0	82 3	82 3*	81 0*
Modderfontein Deeps	41 0	42 0	41 6	43 9	43 6	42 6
Natal Navigation Colls.	—	16 0*	15 6*	15 6*	15 0*	
New Boksburgs	1 8†	1 6†	1 2*	1 5†	1 5	1 5
New Eland Diamonds	28 0*	27 6*	—	—	—	—

*Buyers. †Sellers.

	Fri., 23rd.	Sat. 24th.	Mon., 26th.	Tues., 27th.	Wed., 28th.	Thurs., 29th.
New Era Cons	6 4*	6 6*	6 6*	7 0	7 6†	6 10
New Geduld Deeps	2 2	2 3	2 5	2 5	2 6	2 5
New Kleinfonteins	22 0	23 0	23 0	23 3	23 9	23 3
New Modderfonteins	235 0	237 6*	232 6	235 0*	240 0*	240 0*
New Rietfonteins	3 0*	3 6*	3 9	—	4 3*	
New Unifieds	—	—	—		15 0†	10 0*
Nigels	—	—	—	16 0*	—	—
Nourse Mines	31 0*	—	—			
Orange Diamonds	1 10	1 9*	1 10*	1 11*	1 10*	1 9*
Piggs Peak	9 0*	9 0*	9 0	9 6	9 9*	9 6*
Potchefstroom Estate	—	—	—	1 0	—	—
Premier Deferred		182 6*				
Pretoria Cements	45 0	45 0*	44 6	44 0*	46 0	45 0
Princess Estates	5 0*	5 0*	4 9*	5 0*	5 3	5 6*
Rand Collieries	2 3*	3 3*	2 6*	3 0*	2 9*	2 6*
Rand Klips	2 7	2 10	3 0	3 4	3 3	3 0
Rand Nucleus	2 6*	2 4	2 5	2 5*	2 5*	2 4*
Randfontein Deeps	3 3*	3 7*	3 9	3 10	4 6	4 9
Randfontein Estates	23 9*	25 0*	25 3	25 9	25 6	
Roberts Victors	27 0*	27 0*	—	28 6*	28 6*	35 0†
Robinson Deeps	29 0*	30 0*	29 0*	30 6*	30 6*	30 0*
Rooiberg Minerals	26 0	26 3	26 0*	25 3*	25 6	24 6
Rood. Durban Deeps	—	—	—	19 3*	19 0*	
Roodepoort Uniteds	—	—	—	—	—	5 0*
Rose Deeps	—	—	—	44 0*	—	
Ryan Nigels	3 0*	3 2*	3 2	3 2*	3 2*	
Shebas	5 0*	5 0*	5 0*	5 4	5 0*	5 0*
Simmer Deeps	2 4	2 6	2 6	3 0	2 1*	2 6
S.A. Breweries	39 6*	—	40 0*		—	
S.A. Diamonds	—	—	—	—	—	30 0*
S.A. Gold Mines	10 0*		—	13 0*		—
S.A. Lands	3 4	3 8	3 9	3 9	3 8	3 7
Springs Mines	13 6	14 9	14 0*	14 3	14 6†	13 6*
Sub Nigels	11 9	11 9	11 6	11 6	11 3	10 6*
Swaziland Tins	35 0*	—	—		35 0*	37 0*
Transvaal and Delagoa	40 0*	41 0*	41 0*	—	41 0*	40 0*
Transvaal Coal Trust	33 9	33 9*	34 3*	36 6*	35 0*	35 6*
Transvaal Cons. Lands	22 0*	21 6*	22 0*	24 0	23 0*	—
Transvaal G.M. Estates	50 0	49 6	49 6	49 6	48 6*	48 9*
Tudors	1 0*	—	2 0†	2 0†	2 0†	—
Van Dyks	—	—	—		1 4*	1 3*
Van Ryn Deeps	36 6	37 0	37 0	37 9	37 6	37 6
Village Deeps	34 6†	35 0	34 6*	35 0*	36 0	35 6†
Village Main Reefs	—	—		30 0*	30 0*	30 0*
Vogelstruis Cons. Deeps	0 9*	0 9*	1 0*		1 3*	1 0*
Western Rand Estates	2 3*	—	—	2 6	4 0	3 6
West Rand Consolidated	9 0*	9 0*	10 3*	10 0*	—	
Witbank Collieries	42 0*	43 3*	43 0*	44 0*	—	44 0*
Witwatersrands	68 6*	68 0*	69 0†	69 6	69 0*	69 6
Wit. Deeps	52 6	53 0*	53 6	54 0	54 6*	55 0
Wit. Townships	—	—	19 0*	—		
Wolhuters	13 6	13 9*	13 9	14 0	13 6	13 9
Zaaiplaats Tins	31 9*	33 6	33 0	32 3	31 0*	33 0

*Buyers. †Sellers.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

Feb. 27.—Southern Freeholds; South Deeps; East Rietfontein Syndicate (annual).
March 13.—Worcester Exploration (annual).
March 16.—Robinson; Crown Mines (special).
March 20.—Apex; New Kleinfontein; Benoni Consolidated (special).
March 27.—Simmer Deep; Jupiter (annual).
March 31.—Cassel Coal Co. (annual).

Messrs David Brown and Sons (Hfd.), Ltd., Huddersfield, have acquired the business and patents of John Sunderland, Wheel Cutter, Keighley. The patents for the production of Double Helical Gears, mark a distinct advance, being the only ones that generate the teeth from the basic principle, viz., a rack. The teeth are continuous, thus adding to the strength and being generated from a hardened and ground cutter are more accurate, and consequently give better running results than any other. The cost of cutting is considerably reduced and no doubt in the near future double helical gear will be used in all high-class machine tools.

Automobile Notes.

Those motorists who contend for a reduction in the tax on old cars will be interested in an opinion recently given by the Attorney-General in the State of Iowa. He ruled that the tax on cars is the same for the first four years, but thereafter is but half the original sum.

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There are now in use in the United Kingdom no fewer than 227,907 cars, 179,926 motor-cycles, and 18,005 heavy vehicles, making a grand total of 425,838. Drivers' licences to the number of 607,856 have been issued, and there are stated to be nearly 2,000 owner-drivers of taxi-cabs.

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The Scottish Automobile Club have approved the idea of a reliability trial for light cars being held in Scotland during the coming season, and are now ascertaining what support would be accorded the event by manufacturers. The main proposals are that the course should comprise from 700 to 750 miles on Scottish roads, and include hill-climbing tests, that the engine dimensions should be not less than 800 c.c. and not more than 2,000 c.s., that the car with standard body weight more than 7 cwt. unladen, and the selling price to the public be not more than £275. It is proposed that the entries be divided into classes in which price shall be a factor. This is the beginning of a light car era, and the trial should serve a most useful purpose in assisting prospective purchasers to make suitable choice of their mounts.

* * * *

The Cape-Cairo expedition of the Belgian Scientific Mission made a start on their northward journey on the 15th instant. The car is very much lighter than that in which Captain Kelsey and his party are essaying the same journey. About seventy gallons of petrol are carried, and depots of further supplies have been arranged throughout the long route. Among other objects it is the intention of the party to take a series of cinema films.

* * * *

A novel feature in the Tourist Trophy race in the Isle of Man will be that the competing firms will choose distinctive colour for their cars. This has been done at the request of the R.A.C., and up to the present the following firms have notified the club that they would like the colours mentioned retained for them: Straker-Squire cars, blue; Star cars, bright red; Vauxhall cars, black; Humber cars, stone grey; Sunbeam cars, purple; and Minerva cars, yellow.

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The extent to which the motor is superseding horse traction is shown in the London Fire Brigade estimates for this year's service. It is recommended to add 12 motor-engines, 11 motor-fire-escapes, a motor-tender, and a motor-boat for river use to the brigade's equipment. This is part of a scheme which, when completed, will enable the authorities to abolish a considerable number of sub-stations, and will obviate the necessity of building several others which had been in contemplation. It is confidently expected that not only will superior efficiency be obtained, but that substantial economy will be effected.

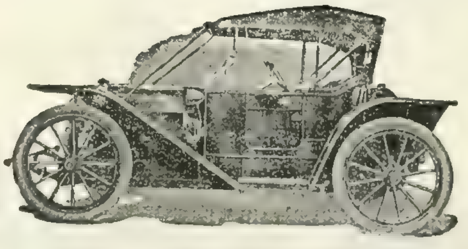
* * * *

The question of tyres is one of such great importance to every motorist that we make no apology for referring at some length to two reports written—the one by Mr. W. Skidmore, a recognised tyre expert of many years' standing, and the other by Mr. J. S. Critchley, a member of the Institution of Mechanical Enginers and of Automobile Engineers—for the syndicates which are placing upon the market an entirely new type of tyre.

The new tyre is called the N.A.P., and differs essentially from the ordinary pneumatic in that it is made entirely of rubber, and is a mechanically-formed and sealed endless single tube tyre without inner tube, having very low air-pressure and requiring no inflation. It is made of tough, good-wearing rubber—with no frabric whatever—which deflects inwardly and compresses, as and when required, in proportion to the load it carries.

Extraordinary advantages are claimed for the tyre. In the first place, the experts consider its life to be from 20,000 to 30,000 miles; indeed, the syndicates propose to give a guarantee of from 15,000 to 25,000 miles per tyre. Owing to the fact that there is no fabric, a much cheaper rubber mixture can be used than is necessary in the case of ordinary pneumatic tyres, and this reduces the cost to practically the same. It is free from liability to puncture or collapse. It cannot burst or blow off the rim, and has great lateral stability.

The use of the inner tubes and pumps is obviated. The hollow air-space within the tyre is mechanically sealed, so



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Knocks or Rings.
1 RAISE When Engine at rest.
1 STOP When Engine in Motion.
2 LOWER.
3 MEN About to Ascend or Descend.
3 IN REPLY Men may enter the Cage or other conveyance.
2 Pause **1 CLEAR SIGNAL** Driver may move at his discretion.
10 ACCIDENT SIGNAL.

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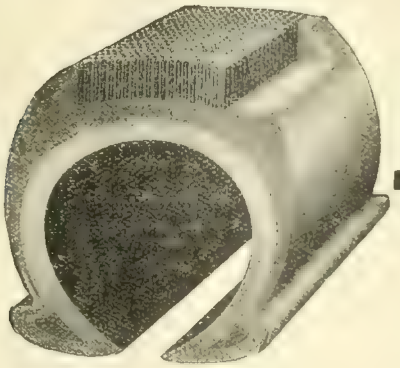

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Use **Stelastics,** which alone have absolutely cut-proof and practically puncture-proof treads.

Stelastics are the only tyres holding the R.A.C. Certificate for 5,000 miles without cut or puncture.

Use **Stelastics,** keep them pumped up to the pressure stated by the makers, and the walls will not break.

Whatever tyres you use give them a chance.

Keep them pumped to pressure.

SOLE AGENT:

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FIRST FLOOR,

COMMERCIAL EXCHANGE BUILDINGS,

BOX 1352. PHONE 3.

JOHANNESBURG.

that the air is confined therein, gives more rapid recovery after deformation than an unconfined air-space. The tyre cannot be injured by water, and owing to the formation and width of the tread, and to the fact that the circumferential road contact is nearly double that of ordinary pneumatic tyre, it possesses natural good non-skidding qualities.

And with all these advantages, what about the resiliency? Mr. Critchley found the comfort in riding with the N.A.P. tyre to be equal to that of the ordinary tube pneumatic tyre. In the latter the higher the air pressure—and high pressure in its case is necessary for safety and economic running—the less is the absorption of the road shocks. The N.A.P., with its low air pressure, gives a marked advantage, because the tyre absorbs shock better when coming into contact with the road.

Mr. Skidmore considers that the resiliency has never been equalled by any tyre on the road. He says: "I have never ridden in a car, even when fitted with every known appliance to reduce vibration and shock, that for ease and comfort in riding can approach a car fitted with ordinary artillery wheels and N.A.P. tyres alone."

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Henry Herbert and Co.	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Zaaiplaats Tin Mining Co.,

LIMITED

(Incorporated in the Transvaal.)

NOTICE OF DECLARATION OF DIVIDEND No. 14.

NOTICE IS HEREBY GIVEN that an Interim Dividend of 25 per cent. (1s. 3d. per share) has this day been declared payable to all shareholders registered in the Books of the Company at the close of business on Saturday, the 31st day of January, 1914.

Dividend Warrants will be posted to South African Shareholders from the Head Office, P.O. Box 179, Pretoria, and to European Shareholders from the London Office, Pinner's Hall, Austin Friars, London, E.C., on or about the 6th March, 1914.

The Share Transfer Register will be closed from the 1st to the 4th February, 1914, both days inclusive.

By Order of the Board,

H. P. WEBBER, Secretary.

Norwich Buildings, Church Square,
Pretoria, 23rd January, 1914.

THE PATENT "ACME" REGD

STONE BREAKER

FOR

STONE, ORE, ROCK ETC

THE MOST EFFICIENT FOR ALL SERVICES

CONCRETE & TAR MACADAM MACHINERY

GYRATORY & ROLLER CRUSHERS

GOODWIN, BARSBY & Co LEICESTER ENG.

The Week's Company Meetings.

WITBANK COLLIERY.

Very Satisfactory Year.

Life of the Mine.

Company's Appreciation.

The thirteenth annual general meeting of the Witbank Colliery, Ltd., was held in the board-room, Cullinan Buildings last week. There were present Messrs. W. H. Dawe, chairman, P. Dreyfus, A. Barker, R. Goldmann, W. H. B. Frank, J. H. Ryan and A. Gregor, acting secretary, the share representation being 87,703 out of a total issue of 210,000 shares.

Engineer's Report.

The report of the consulting engineer, Mr. S C. Thomson, was as follows:

The operations during the past year were again very satisfactory. The output amounted to 756,631 tons, an increase of 10,008 tons compared with the previous year. This output, which shows an increase over any year since 1910, would have been greater still had it not been for the constant shortage of railway trucks, since from the statement appended you will see that the days worked only amounted to 281.2, which is the lowest since 1907. The areas developed in both the Witbank and Uitspan Districts show a continuation of the average thickness and quality. As has been the practice in previous years, a table is attached showing the annual productions since the beginning of operations and from this statement it will be seen that up to the end of the year under review 6,286,362 tons have been marketed. The screening and sorting plant at the Uitspan section is being increased with the idea of meeting any further increased demand for coal, whether for Inland or Oversea trade. It cannot fail to interest you to know that information obtained by boring in advance of the present workings indicates that on the present basis of output from the Witbank and Uitspan Collieries of 70,000 tons per month, the life of your holding will be well over thirty years.

Chairman's Remarks.

The Chairman said: The financial statements for the year ended the 31st of August last, together with the directors' report and the reports of the company's consulting engineer and manager, will have made it clear to you that the results of the past year's working were satisfactory, as the profit earned was practically the same as that for the previous financial year, in spite of the disorganisation resulting from the strike on the Reef which took place in July last. The output for the year amounted to 756,631 tons, which was an increase of 10,008 tons on that of the previous year, and your consulting engineer and manager both point out that the areas developed in the Witbank and Uitspan districts show a continuation of the average thickness of the seam, while the quality continues equal to any in the district, and the development which has been done is capable of providing sufficient working faces to double the present output, if that were necessary.

Thirty Years' Life.

Another item of interest dealt with by Mr. Thomson is the fact that information obtained by boring in advance of the present workings indicates that on the present basis of output from the Witbank and Uitspan Collieries of about 70,000 tons per month the life of your company's holding will be well over thirty years. Of the other points referred to by the manager, one is the sinking of a circular air shaft in the vicinity of the most southerly development drive, the effect of which will give efficient ventilation for some time to come. During the year the only expenditure incurred in connection with buildings is that which has been spent on improvements to the native compound, the importance of which arises from the fact that this expenditure has been incurred for the purpose of improving the health conditions. The profit for the year amounted to £73,323, and to this must be added £2,130 derived from sundry revenue. The appropriation account has been summarised in the usual manner in the directors' report. The balance to the credit of the appropriation account brought forward from the 31st of August, 1912, was £41,139, as against a credit balance of £57,258 brought forward to the current financial year.

Dividend.

The dividend for the last six months of the financial year was 10 per cent., as against 15 per cent. declared for the first half of the year, and the reasons which influenced your directors in making this declaration were published when the declaration was made. Briefly, they were to this effect, that as a result of the reduction in the working hours of the miners in the Transvaal collieries, made in July last, it was found necessary to add to the existing plant, in order to be able to maintain the output as hitherto: that is to say, by increasing the mechanical conveniences it is intended to make up for the shorter period worked. It is also desirable to electrify the plant on the Uitspan property. For these reasons the board wished to have at its disposal additional cash resources to meet the necessary requirements, and decided to declare a dividend of 10 per cent., though profits for the second half of the financial year were more than sufficient to pay 15 per cent. I would also point out that no special provision has yet been made for the expenditure on the equipment of the Uitspan property, which on the 31st of August last amounted to £27,084. In the meantime, however, this amount figures on the credit side of your balance sheet. Your directors may come to the conclusion that it is desirable that this asset should be capitalised; but if, on the other hand, they do not consider such a step advisable, and that the expenditure necessary for the work which is in hand can be met without making further financial arrangements, I feel sure, judging from the views expressed to me by shareholders, that their decision would have your approval.

Truck Shortage.

Your consulting engineer mentions that the output for the past year would probably have been greater had it not been for constant shortage of railway trucks. This question of the shortage of trucks was brought prominently forward a few months ago, and then received the fullest consideration of the Railway Administration and the Transvaal Coal Owners' Association. The outcome of the discussions which then took place was an assurance from the Minister that the question would receive immediate attention, and he anticipated there would be no cause for complaint in the future. This question in past years has been a source of trouble to the collieries, and, therefore, I have much pleasure in informing you that since the discussion with the Railway Administration there has been a sufficient supply of trucks.

Railway Strike.

I should like to take this opportunity to express, on behalf of the directors of your company, their great appreciation of the manner in which the coal supply has been handled by the Railway Authorities during the past fortnight. When the running of the railway became disorganised on account of the strike, the Railway authorities, acting with the Transvaal Coal Owners' Association, arranged to keep the gold mines supplied, and carried out their undertaking so efficiently that there was no single case of a gold mine having to stop work for the want of coal. The colliery companies have not hesitated in the past to criticise the Railway Administration when they considered they had cause for complaint, and it is, therefore, only right that we should take the earliest opportunity to express our appreciation of the very able manner in which the important question of the coal supply has been dealt with during the anxious time we have just passed through.

Legal Actions.

There are two questions dealt with in the directors' report to which I would make brief reference. The first is an action which was instituted against the owner of the farm Blesboklaagte, which case was eventually settled by the payment to your company of the sum of £2,500. The second question is in connection with an action which has been commenced against us by the Municipality of Johannesburg for damages in connection with the contract we entered into on the 2nd of November, 1909, for the supply of coal tar to that Corporation. The company has had every effort to arrive at a mutually satisfactory arrangement of the existing differences, but without success. As the action is pending you will allow me to say no more about the matter. We are defending the action instituted against us. In conclusion, I wish to express the apreciation of the directors of the services rendered by the consulting engineer, Mr. S. C. Thomson, and the manager, Mr. J. K. Addie, whose management of the company's affairs has fulfilled the expectations of your directors.

I now beg to formally move the adoption of the reports and accounts, as submitted.

The reports were adopted.

Messrs. Dawe, Rogers and Ryan retired from the board by rotation; they were re-elected, and the meeting closed after Messrs. C. L. Andersson and Co., and J. P. Ablett, F.C.P.A., were reappointed auditors.

THE SOUTH AFRICAN

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WITH WHICH IS INCORPORATED

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Notes and News.

Ferreira Deep Outlook.

A full report of Mr. H. C. Boyd's speech at the annual meeting of the Ferreira Deep meeting will be found elsewhere in this issue. Mr. Boyd was able to point to the greatly improved condition of the mine, and to the satisfactory reduction in working costs. Moreover, he held out hopes that the latter would be further reduced in the present year, and this would offset any immediate possible decrease in value of the ground to be opened up. In summing up, Mr. Boyd said: "The prospects for the current year, granted a reasonable supply of native labour, are therefore satisfactory; under such conditions we may expect more than to maintain the present rate of crushing."

* * * *

Crown Mines and Robinson.

In view of the unexpected opposition to the scheme, the board of the Robinson G.M. Company have decided to abandon the projected fusion with the Crown Mines. A rejoinder to the recently circulated protest of Mr. Hyman against the terms of the amalgamation was recently issued by the directors of the Robinson Gold Mining Company. They point out that Mr. Hyman omits the following points: (1) That the proposed share distribution means that shares will be given in a company with a life of at least thirty years with a prospect of increasing the dividend, against shares in a company with a life of approximately three and a half years. (2) Mr. Hyman in his circular emphasised disparity between the exchange of five £5 shares for two 10s. shares. He dwelt upon the nominal value of the shares, but omitted to set out the actual value which forms the true basis of valuation. (3) Mr. Hyman referred to the "enormous" Debenture debt. This exaggeration is met with the plain statement that the Crown Mines working profit for 1913 amounted roughly to £1,442,000, as against the Debenture issue of the Crown Mines of £1,000,000. The decision to abandon the scheme has been followed by the announcement that the Robinson directors will tender their resignation at the annual meeting.

* * * *

The Sub Nigel.

Development at the Sub Nigel mine is proceeding satisfactorily, and although the Nigel Reef is a notably erratic ore body, the company has developed a very considerable tonnage of profitable ore. For some time past schemes for increasing the equipment of the mine have been under consideration. The capacity of the existing plant is 4,500 tons per month, and there have been two proposals: (a) to increase to 8,000 tons per month; and (b) to increase to 15,000 tons per month. It is not very probable that the latter scheme will be carried into effect—not for some time at any rate—but it is not altogether unlikely that the existing plant will be almost duplicated during the next few months.

* * * *

"Strikes and Lock-outs."

The annual volume issued by the Board of Trade on "Strikes and Lock-outs" furnishes the history and causes of all disputes in the United Kingdom which marked the year 1912. A striking feature is the number of disputes that were settled by conciliation, negotiation, or arbitration; the number settled in this manner being the highest ever recorded. At the same time, the number of working days lost through strikes was considerably higher than in any previous year. This, of course, was due to the national coal strike, towards which special factors, totally separated from the general labour unrest, contributed. From the bare figures it may be gathered that during 1912 industrial troubles reached high-water mark, whereas really it was during the preceding year that unrest was more pervading and menacing to society. A careful comparison will demonstrate that there exists in the labour ranks a considerable section who are more and more inclined to favour voluntary methods of negotiation, and this section will probably increase in numbers in the near future.

Technical Information.

Mr. E. P. Rathbone, of 810 Salisbury House, London Wall, E.C., asks us to state that he undertakes to make written research reports—supplying all the information obtainable by index references, on the published matter contained in books, transactions of scientific institutions, Government reports and current technical literature, English and foreign—on any subject connected with mining and metallurgy, at the moderate charge of ten shillings. If, however, a more extended investigation is required, entailing the making of short extracts or abstracts, a proportionately larger fee would be charged according to arrangement. It is believed that professional and business men connected with mining and metallurgical work, especially those called upon, at short notice, to make mine inspections abroad, or to answer some particular enquiry, will find the use of his services a saving both of time and labour. Reports will be drafted with all posible technical discrimination, and will deal shortly and precisely with the particular point upon which information is required. The intelligence departments of mining corporations might also desire to be kept informed on some subject in which they are particularly interested, necessitating frequent enquiries. To cover such work an annual payment could be arranged.

* * * *

" Even Methuselah Died."

The Rand is at present the subject of a campaign of detraction, in which most of the mining critics of the world appear to be taking a hand. Mr. T. A. Rickard, editor of the *Mining Magazine*, has returned to a subject he has been labouring for a number of years past, and in the December number of that periodical he recalls the fact that more than ten years ago he wrote under the heading of " Even Methuselah Died," an article in the *Engineering and Mining Journal*, of New York, in which he sought to prove that the Rand would some day come to an end. No one is likely to quarrel with the view that to all things must sooner or later be written " Finis," and this is true even in regard to gold mining. But it may be remarked that during the past decade the Rand has grown enormously in every direction—in production, in profit, in dividends, in number of employees, and in a multitude of other vital directions. It may also be observed that it has taken the Chamber of Mines, Mr. G. A. Troye, Mr. H. H. Webb, Mr. H. S. Denny, and a host of other responsible critics ten years to find out what Mr. Rickard knew in May, 1903. But another view that may be held is that Mr. Rickard was somewhat premature. He wrote the obituary of our particular Methuselah when Methuselah was only a little boy, an achievement which after all calls for no tremendous prophetic ability. Mr. Rickard is, of course, entitled to his opinion that Methuselah will die, that the Rand will come to an end one day. Even we who are numbered among the optimists are in agreement with him there. But objection may be raised against bulletins as to the patient's condition which are wholly erroneous. In the annual review number of the *Mining and Scientific Press*, Mr. Rickard gives some figures as to the output, profit and dividends of the Rand. In the table he gives the 1913 figures as follows:—Gross output, £37,000,000; profit, £11,350,000; and dividends, £6,500,000. He qualifies this by stating: " The totals for 1913 are, of course, estimated." Mr. Rickard's estimates are a long way wide of the mark. The output was £35,812,605, or over a million less than Mr. Rickard's figure, on account of the strike and the subsequent disorganisation of the labour force. But despite this, dividends were £8,194,099, or 25 per cent. higher than the *Mining and Scientific Press* figures. Mr. Rickard rightly insists that dividends are the true gauge of an industry's prosperity, so that his figures are seriously inaccurate. Everyone is entitled to his particular view, but it is dangerous to preach sermons from fictitious texts.

* * * *

Coal and the Strike.

Naturally colliery circles in Great Britain have been keenly interested in the action of the Union Government during the recent abortive strike. " The step comes as a reminder," remarks the *Colliery Guardian*, " that, even in a country where the glamour of gold and diamonds somewhat outshines the ' base ' mineral, the economic value of coal may be underestimated. Notwithstanding the increased use of electricity generated by water power, the coals of the Transvaal and Natal continue to be essential to the gold mining industry and the railways. As the Power Commission opined in 1909, ' the reduced cost in the production of power so expands its use, that the consumption of coal becomes greater in the aggregate.' " The paper proceeds: " The action of the Government is a striking commentary on the statement made by the Department of Mines, in its contribution to the *Coal Resources of the World*, that ' the location of new coal fields or the precise delineation of those already known, is a matter that has little immediate interest either for the private individual, the general public, or the State.' South Africa has found that even this ' Cinderella ' of the coal fields is of some account, and it may be urged that economic conditions such as those that have hampered the coal trade of the Transvaal and Natal are matters of paramount interest both to the general public and the State. Incidentally, this South African precedent is one to be remembered should similar circumstances arise in Great Britain."

* * * *

" I.M.M."

The Council and members of the Institution of Mining and Metallurgy celebrated the formal opening recently (the twenty-second anniversary of the formation of the society), by the Lord Mayor, of their permanent home at 1, Finsbury Circus, London, E.C. The able and energetic secretary, Mr. C. McDermid should soon make the dignified quarters he now presides over " the Mecca "—as Dr. Hatch aptly put it—of mining engineers in all quarters of the globe. Mr. Bedford McNeill, the President, welcomed the Lord Mayor in a felicitous speech on behalf of the Council and the 2,400 members of the Institution. He referred to their definite decision to petition the King-in-Council for a Royal Charter. A souvenir of the event was presented to the Lord Mayor in the shape of a gold key, the wards of which were the letters " I. M. M." Mr. Edgar Taylor, the treasurer of the Institution, and Dr. Hatch, the President-Elect, proposed the vote of thanks. After the formal opening the Lord Mayor and the numerous members and guests inspected the building, which contains capacious Council and secretarial rooms, a well-stocked library, writing and smoking rooms, etc.

* * * *

Lloyds and the Rand.

According to London mail advices, Lloyd's underwriters were naturally very jubilant at the good news from South Africa. In the circumstances almost the whole of the large amount of premiums recently received in respect of the difficulties in the Transvaal and surrounding territory represent net profit. This is an excellent beginning to the new year; in fact, one has to go back a long way to find a similar magnitude of business calculated to yield equally satisfactory results. It is true that in the Rand miners' strike of July, 1913, underwriters escaped nearly scot free, but the number of policies, together with the amount they represented, was then infinitely less than the total of the risks recently accepted. Lloyd's underwriters are, as a rule, exceptionally fortunate in regard to their " outside " business, for, with very few exceptions, the premiums they accept in connection with possible disturbances of the peace involve no claim whatsoever. Moreover, the net result is regarded as a permanent addition to the volume of business at the great underwriting institution; that is to say, taking the present position in South Africa as an instance, persons who have never troubled before to take out policies against the contingency of mob violence are expected to now do so in all probability for many years to come. There is an old saying at Lloyd's that " absence of claims means absence of premiums," but this statement would be more correct were it made to read " absence of apprehensions means absence of business." Underwriters have the satisfaction of knowing that their good fortune in regard to the outcome of the recent labour crisis in South Africa is shared by many other great financial institutions which have equal cause for congratulation, and of these the Stock Exchange itself is, of course, not the least important instance.

New Transvaal Chemical.

The report of the New Transvaal Chemical Company, Ltd., for the year to 30th June last, presented at the meeting on the 20th ult., states that negotiations for the purchase by the Witwatersrand Deep, Ltd., of thirteen and three-quarter mining claims, belonging to the company, at Delmore, had been practically concluded during the year, and the directors desired to deal with the matter definitely in the report and acounts now submitted; but formal confirmation by the shareholders of the purchasing company was necessary before this could be done, and as the general meeting called for the purpose was not held until the 21st November, 1913, the issue of the report and accounts takes place somewhat later than would otherwise have been the case. The purchase was formally approved at the general meeting mentioned, and the price paid was £40,389. The directors decided to utilise this amount in (1) writing off certain items of special expenditure amounting to £9,051; (2) placing £20,000 to the general reserve fund; and (3) writing down the cost of investments in subsidiary and other companies by the balance, namely, £11,337. The balance at credit of profit and loss account, after charging depreciation, interest on Debentures, London expenses, and the remuneration of the local Board, is £22,979, as against £32,300 for 1911-12. The Board recommends that this shall be appropriated as follows:—To the Preference shares—the fixed cumulative dividend of 6 per cent. per annum, £9,000; 20 per cent. of surplus profits, £2,546; to the Ordinary shares—80 per cent. of surplus profits, £10,183; add brought forward from the previous year, £3,880; to the remuneration of the London Board, £1,250. An interim dividend on the Preference shares of 3 per cent. was paid on the 1st May, 1913, absorbing £4,500; a second interim dividend on the Preference shares of 3 per cent., making up the fixed cumulative dividend of 6 per cent. for the year, was paid on the 6th December, 1913, absorbing £4,500; and the directors now recommend payment of an additional dividend of 1 per cent. (making 7 per cent. for the year), absorbing £1,500; carrying forward for account of the Preference shares £1,046. The directors also recommend the payment of a dividend of 8 per cent. on the Ordinary shares, absorbing £12,000; carrying forward for account of the Ordinary shares £2,064. The Ordinary dividend twelve months ago was at the rate of 18 per cent. The decrease in profits is said to be due to higher working costs.

* * * *

Progress at the "State Mines."

Good progress is being made in connection with erecting the Government Areas mill on Modderfontein. Excavation work is completed, and the foundations are in a forward state. The whole equipment will be ready towards the end of the current year; just when, it is difficult at this stage to say, but it can be virtually regarded as a certainty that the plant will be ready by the time mentioned at the last annual meeting by the chairman. As to development, the report for the quarter ended with December last shows that from all four shafts work is proceeding apace, and that reef disclosures are most satisfactory both as to width and value. In the neighbourhood of the south-east shaft 1,656 feet were driven, sunk and risen during the three months, of which 1,234 feet were off the reef. Of the footage sampled 320 feet were on payable reef averaging 19·8 dwts. over 44·5 ins. In the south-west shaft neighbourhood the crosscut from the lower station cut the reef at 100 feet and 37 feet of driving on the reef to date shows an average width of 52 ins. and an average value of 7·1 dwts. From the north-east shaft there have been good disclosures. In this section 840 feet of the footage sampled were on payable reef, the average width disclosed being 27·2 ins and the value 18·4 dwts. As to the north-west shaft section, 560 feet were on payable reef averaging 27·8 ins width and 10·7 dwts. value. There are, of course, considerable stretches of unpayable ground in the property, but on the whole it certainly appears that the State Mines is going to become a very large producer of gold and an earner of substantial profits.

TOPICS OF THE WEEK.

THE TRIUMPH OF LAW AND ORDER.

AFTER the embittered outburst of rhodomontade, vague abstractions and mock heroics on freedom and the liberty of the subject with which the session at Capetown was opened by the Labourites, the clear and unimpassioned statement of realities which constituted General Smuts's *apologia* for the recent actions of the Government, came like a breath of fresh air from the veld. Brushing aside the empty formulas of those who are forever prating of freedom while denying it to others, he invited his hearers and the greater world of listeners outside to examine with him the unvarnished facts. A plain recital of the realities he rightly considered was the most effectual rejoinder to the critics, their abstract concepts, and their high falutin' rhetoric. Like Cromwell on another famous Parliamentary occasion, he could say, "I summon you to speak of Things"; and, dispelling the mists and the doubts and the subtleties that have been assiduously woven round the situation by those who either could not or would not admit the naked truth, he unfolded the whole protracted, sordid story of the South African Syndicalist conspiracy, born in July and buried in January. For our part, never having wavered in our belief in the wisdom and sound judgment actuating the actions of the Government in the recent crisis and in the events leading up to it, General Smuts's defence affords overwhelming confirmation of the absolute necessity for the steps taken by the Cabinet. After the masterly exposition of the chain of events during the last six months of 1913, there is no longer any reason for even the most sceptical to question the justification for the Government's stern repressive measures. Nor can it be doubted that the desperate designs and devices of desperate characters demanded the adoption of the most determined methods by the Administration. Lurid pen pictures could easily be drawn depicting the reign of chaos and anarchy that threatened the Rand. Even, at best, the inevitable, slower and more peaceful processes of an industry disrupted, dislocated and disorganized, would assuredly have resulted in starvation and red ruin sufficient to have provided the world with a staggering spectacle of Syndicalists' folly. From these terrors, only vaguely realisable as they are, the Government by its promptness and the thoroughness of its methods delivered us. Indeed, the Government, knowing what it did of the secret aims and methods of its enemies, had no choice in the matter. On the one side lay cessation of trade and industry, unemployment, destitution, and public bankruptcy, the diapason ending full in anarchy. On the other side, at worst, were ranged but the yelping chorus of critics whose tender consciences and pride of race were likely, forsooth, to be outraged by the Government overstepping the strict letter of the Constitution. The Ministers, it can now be said, without reservation, did the only right and sensible thing. They overawed the violent, protected the willing workers, stopped the strike, and sent the arch-conspirators packing. After General Smuts's speech it is unthinkable that Parliament will refuse to ratify the measures and policy pursued, by not passing the Indemnity Bill. The duty of the Opposition is clear, and though at the time of writing we are without news from Capetown on the point, we have no doubt that Sir Thomas Smartt and his party will do the right thing. As Walter Bagehot put it: "In a country fit for Parliamentary institutions, the partizanship of members of the Legislature never comes in manifest opposition to the plain interest of the nation; if it did, the nation being (as are all nations capable of Parliamentary institutions) constantly attentive to public affairs, would inflict on them the maximum Parliamentary penalty at the next election and at many future elections. It would break their career." Plainly this is just such an occasion for partizanship to be postponed to the interest of the nation. To quote General Smuts: "The crisis through which South Africa had passed in the past six months was admittedly unparalleled in its history, and the issues are, in a certain sense of the word, of wide importance. The movement for a general strike which they had seen in operation in South Africa in the last few months had nowhere else, so far as he was aware, been put into operation in any part of the world. By Syndicalists and anarchists it was looked upon as their last great weapon; in fact, one great French writer said that to the Syndicalist the general strike was what the second advent was to the Christian. It was the great thing they looked forward to. They in South Africa had seen it come to pass—that last judgment on society—and it presented such new features for the interests of mankind that the House was bound to give it its most careful and impartial consideration." As to the verdict of Parliament, there can be no question. South Africa has emerged triumphantly from a transcendent ordeal; and Parliament owes it to itself and to the country to vindicate the action of those who saved the situation, by a full, prompt, and unreserved endorsement of each and every step taken by the Government.

INSURANCE ACTIVITY AND THE DEARTH OF CAPITAL.

The speeches delivered at the annual meeting of the African Life Assurance Society last week were notable for a variety of reasons. The Chairman, Mr. R. Baumann, and the indefatigable Managing Director, Mr. I. W. Schlesinger, were able to point to another record year for the Society, the ninth of an unbroken succession in which it has evolved from the chrysalis stage into a vigorous, flourishing undertaking. In several directions, marked progress was shown for the year, the increase of renewal premiums from £68,761 to £101,406 being, as the Managing Director claimed for a young company, "marvellous indeed." The number of applications received during the year was 6,840 to assure £2,276,075; of these 1,532 for the sum of £453,825 were declined, postponed or not proceeded with, leaving 5,308 applications completed and policies issued, totalling £1,822,250. This is the largest amount ever assumed by the society in any one year. New business is only accepted after most careful sifting, and the Chairman explained that the policy of the African Life had ever been to advance, but while there had been constant progress, it had always been along the path which experience taught was the only road to follow. The accumulated funds of the society now amount to £276,483 11s. 10d. The addition during the year was the largest on record, an increase of £72,842 19s. 5d. being shown. As illustrating how such a large amount of funds, carefully administered grows of its own momentum, the Chairman showed that the funds at the end of 1910 amounted to £120,017 8s. and at the 31st of December, 1913, stood at £276,483 11s. 10d., so that in three years the assurance fund has been considerably more than doubled. These figures are eloquent of sound and careful management tempered by the spirit of progress and enterprise which has from the beginning characterised this young society.

The scope and function of a life assurance company cannot, of course, be dissociated from the general business conditions of a country; and Mr. Schlesinger is, therefore, in a unique and privileged position to deal with the present financial outlook. No one who has followed his consistently successful career can be surprised to find him in the ranks of the confirmed optimists. Undue optimism is a charge often brought against this paper, and it is a charge which we regard as the highest compliment. Mr. Schlesinger preaches the commonsense doctrine that the first essential of success is confidence in ourselves and in the great destiny of South Africa. "It would be idle to deny," he said, "that a certain feeling of discouragement has spread over the community; at the same time I consider the discouragement overdone. There is no reason why we should and every reason why we should not go on living in an atmosphere of despondency. In the first place it is against human nature; in the second place it is unsound. Personally, I think that if a careful analysis of the business situation were made, it would clearly show that the majority of complaints heard about business operations during the past year have been without real foundation or reason. If we were to take the total of all big things in business for the past twelve months, we would find that new records have been set for the twelve months' period by nearly every one of them, and the sum total of them all would exhibit a decidedly new record in transactions. The turnover of the banks, production of coal and base metals, crops, wool and feathers, etc., have all during this period exceeded any similar period in the history of South Africa." This is a most inspiriting statement coming from such a cautious quarter, but who will deny its inherent truth or the insight on which it is based? Not less valuable than this confession of faith and confidence is Mr. Schlesinger's diagnosis of the undoubted existing financial stringency. This, he shows, is not contradictory to his favourable reading of the signs, but on the contrary, an inevitable corollary thereto. "These activities," he explained, "have caused a tight money market because we have not enough money, and scarce money in turn has caused business failures to increase materially both in number of failed concerns and in total liabilities. The trouble has not been lack of business, but lack of money with which to carry it on, and the continual dulness of the Stock Exchange is another natural result of scarce money. The banks have been busy taking care of the absolute needs of their customers in manufacturing and merchandising lines, in helping importers and exporters to finance their exports and imports and in assisting the moving and marketing of crops, wool, etc., the total of which for the period was much larger than in any other previous year."

Mr. Schlesinger not only diagnosed the evil, but he suggested the cure—a cure with which our readers will be familiar, as it has been over and over again emphasised in these columns. Mr. Schlesinger showed that "Not enough money in the country," has always been the cry throughout South Africa, yet millions, representing premiums, are sent abroad. He maintained that if the vast sum exported year in and year out could be retained in South Africa it would tend to relieve the banks considerably, inasmuch as these institutions would hardly ever be called on to lock up part of their funds in loans on real estate and farm mortgages as they were now frequently compelled to do. To grant mortgage loans on real property was hardly the function of a commercial bank. By retaining insurance premiums here the insurance companies in due course would be able to take care of all mortgage loans offered. Moreover there would be no necessity for a Land Bank—in name only—for that is the exact position of the Land Bank. It had no funds to make loans with to-day. Taking the African Life as an example, Mr. Schlesinger was satisfied that within five years they should have at least one million sterling out on good first mortgage. The same applied even to a greater extent to the other South African companies, and if the people who had the interests of this country at heart, would only realise the prime importance of retaining here as much money as possible, Mr. Schlesinger declared that a different story would soon be told. As we have said, the appeal made so forcefully and convincingly by Mr. Schlesinger is a striking endorsement of the proposal made repeatedly by this paper. A year ago, we showed that the joint stock banks had come almost to the end of their tether as regards their lending departments, and that the stream of capital necessary to irrigate all the industrial and commercial activities of a young country of illimitable, undeveloped resources like South Africa was woefully inadequate. Mr. Schlesinger says the same thing in different words. And he recommends as a practical insurance expert, the same remedy that we advocated a year ago. Our proposal, for obvious reasons, could not be openly supported by the representatives of foreign or overseas insurance companies. But the personal sympathies of the great majority of them, we know, were strongly in favour of the proposal; and it is significant that no protagonist has come forward to champion the existing anomalous state of things or to criticise the proposal. Anyone who has studied the question at all knows there is no lack of safe, first mortgage investments in this country. It is capital alone that is lacking; and we shall be surprised and disappointed if Mr. Schlesinger's powerful advocacy fails to attract the serious attention of the Government to what is, in our opinion, one of the most constructive and statesmanlike proposals placed before it for many a day.

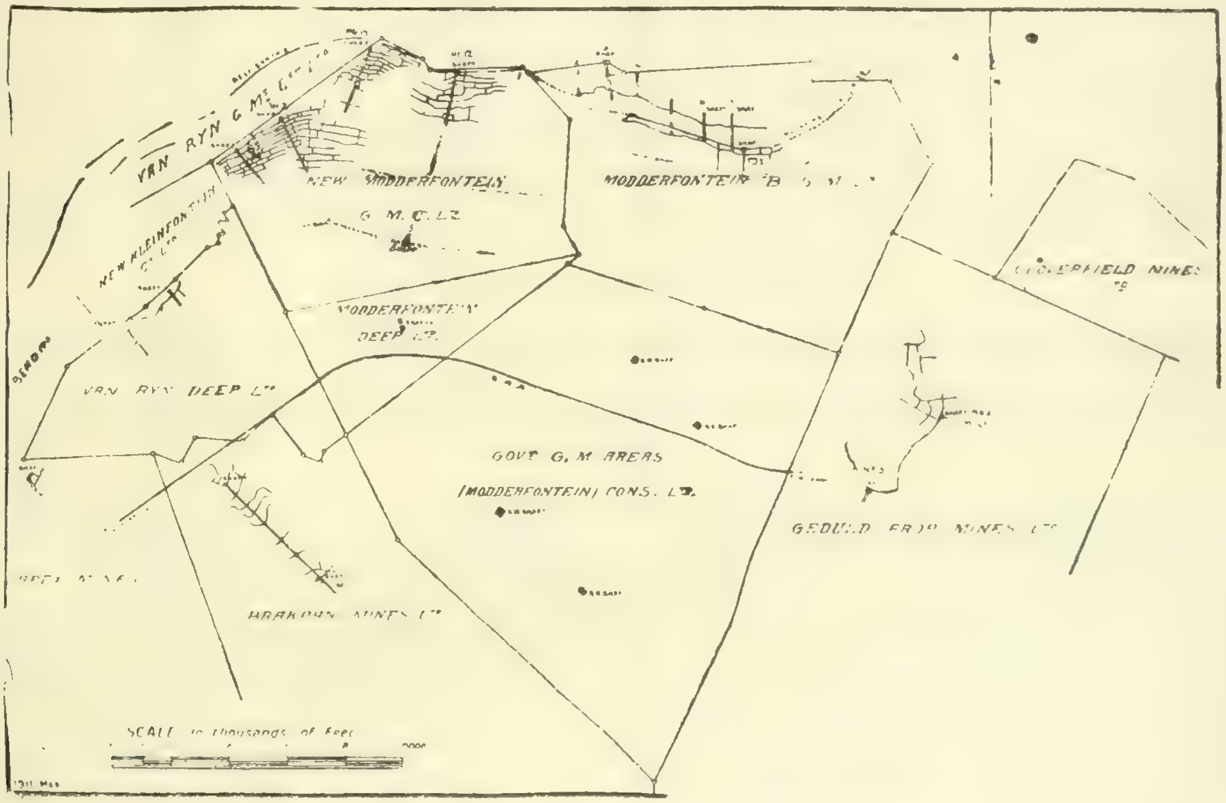
EXCELLENT PROSPECTS OF THE MODDER DEEP.

Ore Reserve Position—Original Life Estimates Likely to be Exceeded—The Question of Costs—Favourable Financial Outlook.

The improving prospects of the Modder Deep Levels are brought into prominence by the publication of the details of development in the December quarter. One result of the quarter's work is that the value of the total footage sampled to date has been increased by half a dwt. The official particulars are as follows:—During the quarter ended 31st December last, 4,462 feet were driven, risen or sunk, inclusive of 289 feet sunk in the main incline shaft, 3,135 feet were sampled, showing an assay value of 11 dwt. per ton over 41 inches. Since the commencement of development work a total of 16,582 feet has been driven, risen or sunk. In respect of 3,042 feet the reef has not been exposed and 393 feet had not been sampled at the end of the quarter. The balance of 13,147 feet assays 8.9 dwt. per ton over 45 inches. The following are particulars of tonnage developed as at December 31st:—982,000 tons developed, inclusive of 134,000 tons contained in shaft pillars, of an average assay value of 7 dwts. over an assumed stoping width of 75 inches. 191,000 tons partially developed of an average assay value of 10.5 dwts. over an assumed stoping width of 62 inches. Total developed and partially developed ore, 1,173,000 tons, of an average assay value of 7.5 dwts. over an assumed stoping width of 73 inches. In addition to the above, there are 300,000 tons of probable payable ore, indicated by development work so far done, to which no value can be as yet assigned. Good progress is being made with the mill of 60 stamps and six tube mills, designed to crush 360,000 tons per annum. The mill is expected to be completed about a year hence, and it is clear that at the present rate of development, by the time crushing starts, the ore reserves will be some seven years ahead of the mill—an eminently satisfactory position. The finances of the company are likewise in a healthy condition. It is now certain that the options on the remaining 105,500 shares at 35s. outstanding till September 30 next will be duly exercised, and the issued capital thus brought up to £500,000. This will provide ample funds for financing the property up to the producing stage, and the profits from the "jump off" should therefore be available as dividends.

The Life Question.

Despite the comparative flatness of the reef, the generous stoping width of that portion so far exposed warrants a most favourable view being taken of the probable life of the property. The original estimates put the life at about 20 years, on the initial crushing basis, but in view of the latest favourable developments, it is safe to say that that estimate will be considerably exceeded.



Map showing some Prominent Far East Rand Properties

Cost and Profit Prospects.

In regard to the profit-earning prospects, there is no reason why the excellent showing of the neighbouring Van Ryn Deep should not be emulated. In December that mine, with its 80 stamps and 8 tube mills, milled 37,050 tons for a recovery of 33s. 6d., at a cost of 16s. 5d. per ton, plus 2s. 9d. per ton development redemption. The prospects of reducing costs were never more favourable. In several directions recent reorganisation holds out promise of substantial economies being effected, and the native labour supply, now improving monthly in point both of number and efficiency, justifies high hopes under this head. Though the prospect of reduced costs may not mean as much to the Modder Deep as to some others, yet it is obvious that the effect on the life and profit-earning potentialities of the mine must be considerable.

IMPROVING OUTLOOK AT GEDULD.

Augmented Ore Reserves—Strong Financial Position—Big Increase of Plant Contemplated—Prospects of Reduced Costs.

Like those of other Far East Rand properties, the prospects of the Geduld have materially improved of late. The official particulars of ore developed at December 31st last show a much-improved position. At that date 1,757,000 tons were developed, inclusive of 203,000 tons contained in shaft pillars, of an average assay value of 6.9 dwts. over a stoping width of 58 inches. In addition to the above there are 106,000 tons of probable payable ore, indicated by 2.125 feet of development work on reef, the average linear assay value of such footage being 6.3 dwts. over a stoping width of 59 inches. These figures reflect a substantial augmentation in the tonnage developed, and on the inch-dwt. basis a slight increase in the average value of the ore opened up. The financial year, which closed on December 31, greatly strengthened the financial position of the company. At that date it had cash in hand exceeding £50,000, or more than sufficient to distribute a dividend at the rate of 5 per cent. for the year. All the circumstances, however, favour a conservative policy in the ultimate best interests of the property. It is clear that the possibility of a substantial increase in the monthly crushing capacity from the present figure of 24,000 is brought nearer by this improvement in the ore position, though the latter figure, owing to labour shortage, has not yet been quite reached. The hopes of the designers of the present enlarged and extended plant in regard to improved extractions are, it is satisfactory to note, being entirely realised. The improved prospects ensure that the option granted to Messrs. Goerz & Co., Ltd., up to June 8th next, on 100,000 shares at 25s., will be duly exercised, and the proceeds will defray the cost of the additional plant. Naturally, for the Geduld, the prospect of reducing costs is of more than usual importance. Owing to the comparatively small scale of crushing operations and the heavy development charges, the working costs have always been a big item at this mine. In December, for instance, they amounted to 22s. 11d., inclusive of 3s. 3d. for development redemption. Obviously, the projected expansion in crushing operations will have a salutary effect on that figure; and, in addition, there is the general expectation of savings to be effected by reorganised labour supply and higher efficiency. With the advent of reduced costs, and their corollary, easier monetary conditions, the Geduld is, therefore, to have the opportunity to realise, in increased measure, its undoubtedly great potentialities. Plainly, the lesson is not without significance for the whole Rand.

HOW SURFACE WORKING COSTS CAN BE REDUCED.

Scope for Material Economy Above Ground on the Rand—Machine Shop Policy of the Future.

Although it is generally held that the principal scope for reduction of working costs on the Rand lies underground, it is decidedly interesting to note that there are to-day a large number of responsible mining men—consulting engineers, mine managers, and resident mine engineers—who hold to the view that there is a large field existing above ground for economy in working expenses. It is perhaps just a little surprising to find that such an opinion is held to-day, for there has been tremendous improvement in above ground plants during the last few years, milling and cyaniding expenses have been very materially reduced, and it has been proclaimed time and time over again that the scope for economy in above ground costs is as nothing in comparison with underground expenditure.

Mine and Surface Charges.

During the last year or two there has been an absence of indication that mining and developing costs are being reduced which must be most disappointing to the many large low grade propositions of the Main Reef series where a reduction of a shilling or two in monthly expenditure would mean all the difference between success and non-success in operations. But meanwhile there has been proceeding a steady though necessarily small reduction in surface charges. The important opinion is now put forward that surface expenses can be further reduced and reduced by a very considerable margin in the direction of the fitting and machine shops.

An Engineer's Views.

"There is undoubtedly plenty of room for economy in the direction of machine shop costs on these fields," remarked a consulting engineer to a representative of this paper during the week. "Hitherto numbers of the mines and particularly the larger mines have maintained very extensive fitting shops. Some of these shops are, in fact, quite large foundries and are capable of turning out very heavy pieces of machinery. But it is highly problematical whether these foundries pay. In fact, it is pretty well certain that the majority of them if the pounds, shillings and pence question was fully investigated would be found to be unprofitable. Some of these mine shops turn out pieces of machinery that can be purchased from oversea at very much less than the actual cost of making. In many instances the staffs of fitters employed are in excess of mine requirements, except in special circumstances which now and then arise. What I mean is that in the ordinary routine of a mine these large staffs are superfluous and unnecessary and could in large degree be very well dispensed with to the great monetary benefit of the industry."

Probable Policy of the Future.

"What, then, is likely to be the policy of the future?" we queried.

"Well," replied our informant, "it seems highly probable that in the future only staffs and equipment necessary for the ordinary routine work of a mine will be maintained. There is likely to be a greater tendency to patronize local foundries, but these local institutions will, of course, have to prepare for the more important work of the mines. Breakdown gangs will have to be held ready to cope quickly and efficiently with any out of the ordinary piece of repair work. There can be little doubt that the mining companies will find such a course much more profitable than the methods previously adopted." Continuing, our informant remarked: "The resident engineer on a mine has hitherto had most of his time taken up in supervising shops and fitters, and he has had comparatively little opportunity for exercising his talents in directions in which his labours would be more productive. All that is likely to be altered in the future. It is probable that in the next few months the entire system of the Main Reef series in regard to shops will be changed. Instead of manufacturing or attempting to manufacture various kinds of material incidental to mines these materials will be obtained locally from mining machinery importers. Merchants will have to maintain considerable stocks of spares and doubtless there will be endeavours to standardise more thoroughly than hitherto. At any rate, I believe the changes I have denoted are about to be put into practice, and I for one think they will have a very beneficial result for the industry."

THE CROWN MINES COMPANY'S NEW SHAFT.

Excellent Sinking Progress—189 Feet Sunk Last Month; 217 Feet in November.

Excellent progress is being made in sinking the new circular shaft of the Crown Mines, Ltd. At the end of January a depth of 1,202 feet had been reached and the footage sunk during the month, despite a loss of four shifts on account of the strike, was 189 feet—a very creditable achievement. In the preceding month 187 feet were sunk, whilst the footage for November was 217. The November sinking, we believe, constitutes a record for a circular shaft, and has only been exceeded by one or two rectangular pits. The shaft in question is located on the extreme western section of the Crown Mines, and is being sunk with the object of improving ventilation in that area of the property. The shaft is of circular type, 18 feet in diameter, and it is expected to cut the reef at a vertical depth of approximately 2,000 feet from surface. It will connect with the 13th, or main haulage level, which is being driven right through the property from east to west. It is probable that the shaft will later on be sunk to the plane of the 16th level at a vertical depth of about 2,500 feet from surface. It was expected that the work would proceed at the rate of about 150 feet per month, and that the reef would be intersected thirteen to fourteen months after the commencement of sinking operations, that is to say, shortly after the middle of this year. But work has progressed so well that is likely the reef will be cut slightly earlier than was anticipated. No doubt the management of the company has been largely influenced in its decision to sink a round shaft by the excellent sinking results obtained in the circular pit of the New Modderfontein G.M. Company. This latter work was described at length in our issue of April 5th last, and as the new Crown Mines shaft will be of the same diameter as the New Modderfontein pit and is expected to cut the reef at a corresponding depth it will be of interest to refer to the New Modderfontein Company's experience. There sinking was started on January 2nd, 1911, the reef was cut on October 29th, 1912, and shaft sinking was stopped November 16th, 1912, the shaft then being 2,258 feet deep. Sinking and walling therefore took place over 22½ months, or at an average monthly speed of almost exactly 100 feet—walling and sinking being done alternately. The cost of sinking averaged £14 9s. 5d. per foot, and of bricking £7 12s. 2d. per foot, or a total of £22 1s. 7d. per foot. The total cost of the surface equipment, exclusive of quarters, amounted to £30,077. We understand that at the Crown Mines a higher rate of sinking than was attained at the New Modder was anticipated, and this should conduce towards further economy in sinking. In any case, the sinking costs of the New Modderfontein Company are highly satisfactory and the general results secured induced us to predict that such other new shafts as were called for on the Witwatersrand—some of them, at any rate—would be of circular rather than of rectangular shape. The Crown Mines Company and the City Deep Company are now fulfilling this prediction, and the results attained—the costs of sinking and the speed—will without doubt be watched with the greatest interest. It may be emphasized that the sole reason for sinking this pit is to render the working conditions in the western corner of the property healthy and pleasant. Not that much fault can be found with the existing ventilation conditions of the Crown Mines, but as this western section is practically unexploited at present and as it is more or less isolated from the main workings of the mine it has been felt that in order to ensure satisfactory hygiene in the western ends a further shaft should be sunk. The new vertical will not be used for hoisting ore, the existing main shafts being capable of dealing with all rock from the various portions of the mine.

ORE SORTING PRACTICE ON THE WITWATERSRAND.

Why the Percentage of Waste Rock Rejected at Surface Has Declined.

The curtailment of ore sorting practice on the mines of the Witwatersrand was briefly referred to in the last issue of this journal and as the subject is of very considerable importance further attention may here be given to the matter. Since 1908 a steady diminution in the percentage of rock sorted out at surface as waste has been evident. In that year 15½ per cent. of the rock mined and hoisted was rejected on picking belts and tables. In 1909 the percentage dropped to 14·45, in 1910 to 13·64, in 1911 to 13, in 1912 to 12½, and last year it was 10·74. Moreover, it should be noted that in December last the figure had fallen to under 10 per cent.—to be exact, 9·82. Two mines—the Knights Deep and Langlaagte Estate—eliminated no waste rock at all, whilst the New Primrose rejected only ·28 per cent. and several other propositions—the New Modderfontein, Simmer and Jack and Simmer Deep included—sorted out very little indeed.

Reasons for the Reduction.

The decline in the percentage of waste rock rejected is attributable to a number of interesting causes. The economic *toute ensemble* of the Witwatersrand is constantly changing, and with the metamorphosis of the past few years it has become necessary to make many important alterations in the details of practice. Ore sorting at surface has been one of the first to demand modification. To-day a considerably larger quantity of ore is eliminated underground and used for "packing" and supporting insecure hanging walls than previously, so that to some degree underground rejection of waste rock has supplanted surface elimination. Milling plants have been greatly increased, and, as was fully explained in this journal some time ago when dealing with the decision of the management of the Knights Deep to abolish sorting at that property, it costs some low grade mines with large milling installations less to crush this low grade ore, much of which contains gold in small quantities, than to sort out the rock at surface.

Influence of Labour Scarcity.

During recent months the prevailing scarcity of native labour has been another consideration which has influenced the policy of the managements of the various mines in regard to sorting. Rejection of waste rock under most circumstances is, within certain limits, a profitable operation, but under some circumstances and particularly when there is a marked scarcity of labour the curtailment of sorting may be much better policy than contraction of milling operations. One is entitled to assume that during the last few months less attention has been bestowed on sorting for this reason.

Other Considerations.

Apart from these considerations there are, of course, pure technical factors which determine the amount of rock rejected as waste. In the absence of the most exact and definite information on the point (which, by the way, would be most difficult to obtain) it cannot be stated that the tendency is for more rich stringers to be found in intimate contact with sandstone waste as development of the Witwatersrand beds proceeds, but in a number of cases sorting has recently been reduced on account of the impracticability of effecting a clean separation of rich ore and barren rock. Thus, in the No. 5 shaft section of the Crown Mines, surface sorting has recently been considerably curtailed because in several South Reef stopes in this portion of the mine there occurs a rich stringer of free gold associated with only a few isolated pebbles on the footwall. The experience of the Crown Mines in the No. 5 section of that property is by no means isolated. A number of mines have reduced sorting percentages because of conditions very similar to those referred to in the case of the Crown Mines.

THE DECLINE OF THE RAND.

A Critical Review of Present Day Position and Prospects of the Industry.

[By H. S. Denny.]

There is something impressive in the suggestion that the huge gold producing industry of the Rand has reached the downhill side of its wonderful career, and it smacks of the paradoxical to affirm this in the face of a record of steadily increasing gross production. Nevertheless, a study of the position must inevitably lead one to this conclusion, despite the fact that for the year 1912 the Witwatersrand produced gold to the enormous value of over £37,000,000 sterling, being an increase of over 3½ millions as compared with the previous year. The explanation, of course, is that as against the continued increase in production there is a marked decrease in the amount of distributable profit. The sum of dividends distributed shows a steady advance up to 1909, but the record since then, as indicated by the following summary—is eloquent of the change that has come over the industry :

Year.	Tons milled	Output.	Dividends.
		£	£
1909	20,543,759	29,900,359	9,523,518
1912	29,163,803	37,182,795	8,331,575
Difference	+8,620,044	+7,282,436	=1,191.940

Since 1909, therefore, the tonnage crushed has increased say 40 per cent. and the output 24 per cent., while the dividends have decreased 12 per cent. From the investor's, and in fact from almost any, standpoint, the vital figure is naturally the dividend, and since the capability of the industry to continue its life depends upon its concurrent capability to earn dividends, it may logically be argued that the serious droop in the latter direction may be safely regarded as an indication that its vitality is on the wane. Every effort has been made to keep on the up-grade, because it was realised that once a sign of serious falling off became visible, all hope of ever recovering would practically be gone. The brains and the energies of the administration have, therefore, been turned from one point to another until it may be said with certainty that all the obvious remedial expedients have had a trial. In the past ten years we have seen the adoption of : The tube-mill, with increased stamp duty and higher gold recovery ; heavy stamps, with lower capital outlay and greater unit efficiency ; hand-stoping in narrow stopes, with less waste rock and therefore higher-grade mill ore ; machine-stoping in wide stopes, saving hand labour, and giving large tonnage at low cost ; selective mining, to give the maximum possible profit in the shortest possible time ; central power plants, to reduce the cost of energy ; central administration, to reduce management charges and to increase general efficiency. And what has been the result of it all? Certainly largely increased capital outlay, and equally certainly much greater tonnage of rock handled, and undoubtedly a reduced "working cost" per ton, but unfortunately a lower yield per ton and a smaller profit per ton. There has been great argument as to the relative merits of big tonnage and low-grade ore, as opposed to small tonnage and high grade ore. The objection to the former policy is that it has entailed heavy capital outlay and that it has led to the milling of much worthless rock. It is claimed, moreover, that any advantage thus gained in operating cost has been more than offset by dilution of grade. Against these arguments it is contended that "working costs" have been reduced, with the result that lower-grade ores could be worked at a profit.

LIMITS OF WHOLESALE MINING.

Without a doubt the practice of increased tonnage *at any cost* has been carried, in some cases, too far. There is a critical point naturally in the relationship of the tonnage milled per day to the economic working of any mine, but in arriving at this point, due weight must be given to a number of contingent factors, such as labour, number of shafts, development facilities, etc., and any one of these may in itself set a limit to the possibilities. That is to say, it might be figured that a property containing a probable billion tons of ore would appear to be unsuitably equipped if it had a plant of only 100 tons per day capacity, and certainly, on the basis of working out the mine in any reasonable "life," it would appear to be so ; but, for the reasons bound up in the contingent factors, above indicated, it might be quite impossible *efficiently* to handle more than 100 tons per day. In such a case, an equipment of 200 tons capacity would probably lead to inefficient work in the attempt to keep that plant running full time, and the result would be disappointing from every aspect. Apparently this is what has happened in many instances on the Rand. Shortness of labour, coupled with other difficulties, has forced managers to resort to all forms of expedients for keeping their mills running—the commonest evil being the inclusion of waste-rock with the mill ore. Waste not only costs just as much to crush and treat as ore, but whereas it contains nothing when it comes to the mill, it has actually carried with it some of the precious metal when it is finally dumped. It has, therefore, substantially swelled the monthly statement of working expenditure, and has simultaneously appreciably reduced the revenue—both very undesirable results. Personally I hold the opinion that it is largely for this reason that, in several instances on the Rand, the increase of milling capacity has been attended with unsatisfactory results, and the degree of the disappointment is only properly realised when allowance is made for the amortisation of the additional amounts of capital involved. Take, for instance, the case of a company crushing 300 tons per day for 320 days per annum with a 20 years' life. Assume it increases its capacity to 600 tons for an outlay of £120,000. Without charging any interest, this sum would represent in its redemption an amount of 1.3 shillings for every ton of ore milled during the rest of the life of the mine, and if a reasonable rate of compound interest be allowed it becomes a correspondingly more serious matter. Unless a mine is in a position adequately to satisfy the demand for the larger tonnage, therefore, without undue strain at any point, it cannot do it to advantage. Hoisting shafts, surface and underground ore stations, stope faces, tram levels, breaker stations, etc., are all called upon for extra duty, and it has not infrequently occurred that, while the treatment plant has had its capacity doubled, nothing has been done relatively to increase the capacity at other points, and the management immediately upon starting its new equipment, has found itself in serious trouble with no possibility of saving the situation except by shutting down—a resort too alarming from the stock market standpoint to be feasible. In shaft work alone the additional time required for introducing and clearing the increased number of underground labourers, and handling the extra amount of tools, stores, etc., is in itself an important matter—especially in deep mines—that must be considered before the question of handling extra milling and development rock is solved. Then again the demand for largely increased development area and number of stope faces has in many cases not been properly met. In short, while every care has been bestowed upon the reduction plant, the tendency has been to neglect the more vital underground part, with the result already indicated. A legitimate increase in milling capacity, consistent with the other features specified, must be beneficial to the business side of the profit and loss account, but it may easily be conceived from the foregoing remarks that an ill-considered, or one-sided increase, might not only fail to secure any real benefit, but might even do great and lasting injury ; and when this was done merely to follow out a fashion that had for its object the automatic lowering of working cost, there is no doubt that it was unprofitable. Investors might therefore have been saved a large amount of capital outlay that indirectly has had to come from their pockets. In the *Mining and Scientific Press.*

(*To be continued.*)

McCreedy (Swaziland) Tins.

Concentrates recovered, 12·35 long tons ; estimated net profit (taking the price of tin at £175 per ton), £260. Owing to serious breakaway in the water race during October, the profits for the quarter are considerably reduced.

Geduld Proprietary Mines.

Appended are particulars of the ore reserves in the Geduld Proprietary Company's mine as at December 31 : 1,757,000 tons developed, inclusive of 203,000 tons contained in shaft pillars, of an average assay value of 6·9 dwts. over a stoping width of 58 inches. In addition to the above there are 106,000 tons of probable payable ore, indicated by 2,125 feet of development work on reef, the average linear assay value of such footage being 6·3 dwts. over a stoping width of 59 inches.

Crown Diamonds.

During January, 22,115 loads of blue ground were washed, yielding 2,187¾ carats of diamonds. The additional hauling and washing plant should be in operation next week.

Modder. Proprietary.

The Modderfontein Proprietary Mines has entered into a provisional deed of sale to dispose of its farm Modderfontein No. 46, comprising 2,600 morgen, to the Union Government at £5 per morgen, whereupon the company will go into liquidation. It was formed in 1903 with a capital of £350,000, of which 300,000 shares were issued, 270,000 in payment for property, while 30,000 shares were subscribed at £2 per share, part called up. Two boreholes were sunk, the southern one to 2,421 feet, without striking the reef.

PROGRESS WITH THE ALBU GROUP.

Van Ryn, New Goch and Meyer and Charlton Record Large Increases--Development Operations Summarised—Results for the Quarter.

THE working results secured by the mines of the Albu group—the General Mining and Finance Corporation—during the three months ended with December 31st last are clearly stated in the quarterly reports just issued by the subsidiary companies of the group. The aggregate profit earned was between twelve and thirteen thousand pounds higher than the aggregate earning in respect of the operations for the preceding three months. Increases and decreases in regard to individual companies were as follows:

INCREASES.

Meyer and Charlton	£6,319
New Goch	8,485
Van Ryn	9,002

DECREASES.

Aurora West	£741
Roodepoort United Main Reef	656
West Rand Consolidated	9,822

TONS MILLED, AND PROFITS.

Below we append particulars of ore milled, profit, and working costs for the various companies:—

	Tons Milled.	Profit.	Costs per ton. s. d.
Aurora West	42,877	£14,788	19 6
Meyer and Charlton ...	44,611	68,564	17 1
New Goch	85,050	19,301	16 4
Roodepoort United M.R.	71,621	3,513	17 8
Van Ryn	115,140	69,463	15 9
West Rand Consolidated	62,555	13,288	21 9

The following notes on the three months' operations for certain companies should be of interest:—

ROODEPOORT UNITED MAIN REEF.

The working profit shows a decrease of £655 12s. 6d. as compared with the results for the previous quarter. The shortage of native labour referred to in the report for the quarter ended the 30th September last has also been experienced during the past three months, with a corresponding effect on the tonnage milled and profits earned. The average development values, as shown elsewhere, represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserves.

The development footage exposing payable ore exceeds the payable footage driven during the previous quarter by 685 feet.

VAN RYN.

The working profit shows an increase of £9,001 13s. as compared with the previous quarter. The improvement is due principally to the larger tonnage milled: it must be borne in mind, however, that operations for the September quarter were adversely affected, to some extent by the General Strike, and also by the subsequent shortage of native labour following thereon. During the quarter under review, the native labour position on the mine has considerably improved, with results that are reflected not only in the increased revenue and profits, but also in the augmented development footage accomplished, which shows an increase of 1,075 feet over that effected for the previous three months.

WEST RAND CONSOLIDATED.

The working profit shows a decrease of £9,821 19s. 11d. as compared with the previous quarter, in consequence of the intensified shortage of native labour at the mine. The tonnage milled is 11,650 less than for the quarter ended 30th September, which, in turn, was considerably below the previously existing standard. The natives at present employed underground represent only about 40 per cent. of the mine's requirements as against a full underground complement during the first half of the year. The explanation for the abnormal decrease is that the General Strike in July last resulted in a very large number of time-expired and short-contract natives leaving the property, which necessitated the transfer of a considerable number of hammer boys to machines and other less highly paid classes of work, especially tramming, in order to keep the mill running. In this connection it may be explained that machine stoping requires fewer boys as compared with hand-stoping, and therefore releases a number of natives who can be employed on tramming, lashing, and other underground work: notwithstanding these transfers, however, there is still a considerable shortage in these last-mentioned (and less remunerative) departments of native labour, and only as this shortage is made good will it be possible to engage new hammer boys who offer for work. It is anticipated that so soon as the native labour force is sufficiently augmented to render it possible to revert to hand stoping, the mine will again attract the additional number of boys required to restore milling operations to the normal level.

The average development values, as shown elsewhere, represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserves.

DEVELOPMENT.

The essential figures regarding the quarter's development are as under:

AURORA WEST.

Number of feet driven, sunk and risen, 2,108ft.; footage sampled on reef, 1,445ft.; average stoping width, 44.06ins.; average assay value over stoping width—Payable (855 feet sampled), 10.49 dwts.; low grade (590 feet sampled), 2.09dwts.

MEYER AND CHARLTON.

Number of feet driven, sunk and risen, 1,639ft.; footage sampled on reef, 975ft.; average stoping width, 46.32ins.; average assay value over stoping width—Payable (560 feet sampled), 26.39 dwts.; low grade (415 feet sampled), 2.42 dwts.

NEW GOCH.

Number of feet driven, sunk and risen, 1,263ft.; footage sampled on reef, 827ft.; average stoping width, 50ins.; average assay value over stoping width—Payable (597 feet sampled), 6.38 dwts.; low grade (230 feet sampled), 2.40dwts.

ROODEPOORT UNITED MAIN REEF.

Number of feet driven, sunk and risen, 3,922ft.; footage sampled on reef, 2,365ft.; average stoping width, 41.04ins.; average assay value over stoping width—Payable (2,060 feet sampled), 6.94dwts.; low grade (305 feet sampled), 3.05dwts.

VAN RYN.

Number of feet driven, sunk and risen, 1,715ft.; footage sampled on reef, 1,140ft.; average stoping width, 38ins.; average assay value over stoping width—Payable (680 feet sampled), 7.8dwts.; low grade (469 feet sampled), 2.2dwts.

WEST RAND CONSOLIDATED.

Number of feet driven, sunk and risen (including shafts), 4,592ft.; footage sampled on reef, 1,600ft.; average stoping width, 46ins.; average assay value over stoping width—Payable (875 feet sampled), 6.2dwts.; low grade (725 feet sampled), 2.8dwts.

Princess Estate and G.M. Co.

During the quarter ended 31st December the Princess Estate milled 66,900 tons for a profit of £4,468 18s. 6d., equal to 1s. 4·0d. per ton milled. The expenditure on capital account amounted to £1,209 2s. 6d. Mine development redemption charged to working expenses, £8,362 10s.; expended on mine development, £3,721 9s. 10d.; redeemed in excess of actual expenditure, £4,641 0s. 2d. Driving, 339 feet; winzes, 93 feet; raises, 814 feet; crosscuts, 32 feet; total, 1,278 feet. The footage driven, risen and sunk on the reef and sampled was as follows:—South Reef, 835 feet, averaging 7 dwts. over 25 inches; Main Reef, 225 feet, averaging 7·5 dwts. over 37·2 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 24,580 tons; Main Reef, 2,526 tons; total, 27,106 tons. These figures are subject to recalculation at the end of the year when block values are made out.

Congo Diamonds.

Advices from Brussels are to the effect that the first sale of Belgian Congo rough diamonds has been attended with very satisfactory results. The production, which was sold for account of the Société Internationale Forestière et Minière, amounted to 6,795 carats, of which 1,723 carats were described as being of first quality, 1,820 carats medium quality, and 3,252 carats of inferior quality. No fewer than 30 tenders were submitted, and, in the result, the whole consignment was acquired by an Antwerp firm at an average price of 30.02 francs per carat, the total amount realised being 204,000 francs.

PROGRESS AT THE STAR OF RHODESIA MINE.

Details of a Promising New Offshoot of the Romola Nigel.

DURING the past two months development on this mine has exposed ore of very high grade. The mine is one of eight mines belonging to the Romola Nigel G.M. Co., Ltd., situated in the Bembesi District, about 30 miles north-east of Bulawayo. The property was taken over for development from the Romola Nigel at the beginning of December last by The Star of Rhodesia, Ltd., a company registered with a capital of £2,500, and without any vendor shares. Under the agreement the capital is to be applied to opening up and developing the mine by means of shafts and drives. The directors are: Lieut.-Colonel Donaldson, D.S.O. (chairman), and Messrs. C. L. Andersson and W. E. Bleloch. The Star of Rhodesia, Ltd., has the right to form a company with a capital of £50,000, of which £10,000 is to be cash working capital, the balance, £40,000, being divided equally by the Romola Nigel and The Star of Rhodesia, Ltd. The property is situated immediately east of the Matabele Queen Mine, controlled by Willoughby's, and the reef now being opened up is an extension of the reef worked at that mine. The Star reef is a quartz body, forming a true fissure lode in an Epi-diorite (Pennell) country. The country rock shows certain zonal differentiations, which can be followed from north-east to south-west, in lines parallel to the lode. The trend of these lines very clearly indicates that the lode is the same in both properties. The material of the lode and the maner of its occurrence are the same in both mines. This is of considerable importance, because in the Matabele Queen Mine the reef has been proved to a depth of 900 feet, and its gold values have been maintained to that depth. The ore, too, contains pyrites nearly to the surface. These facts give good grounds for the conclusion that the reef will prove to be permanent in depth, and that it will maintain its average value both in depth and strike. The surface of the lode presents some interesting features. Like the adjoining Matabele Queen Mine, The Star was worked by the ancients, who seem to have hand-sorted out the rich ore and filled in the old winzes and stopes with the rejected chips. These chips form the body of rubble extending along the surface and occupying the old workings. A rough estimate of the value of this material present in the mine has been made, and it is considered that a profit value of about £7,500 may be expected from this deposit. At one place a small caché of chips of rich ore like that taken away by the ancients was found. It had evidently been placed there by the ancient miners and been covered up or forgotten. This ore is full of visible gold. The Manager's reports for December and January were shown to our representative. The reports are too lengthy to quote in full, but the following extracts will convey a fair idea of the values being developed

January 5, 1914.

Work was started on the Star claims on the 1st December. Development.—No. 1 prospecting shaft sunk 11 ft., depth, 11 ft.; No. 2 prospecting shaft sunk 14 ft. 6 in., depth, 14 ft. 6 in. This reef at surface panned 15 dwts. across 12 ins., but values did not continue and shaft was stopped as old workings were found on a parallel reef to the north and a winze has been started which will be called No. 2. No. 3 winze sunk 18 ft., depth 60 ft. Assay value from 17 ft. to 53 ft., 9.2 dwts. across 20.6 ins. This winze, which is being sunk at extreme eastern end of ancient workings, shows diminished values. As soon as No. 3 has reached the intermediate level (75ft.), driving will be started east and west. The west drive will come under old workings and the east drive will prove value of reef east of No. 3. On this eastern section the reef has not been opened up, the float and rubble, extending for some distance, gave over 10 dwts. returns by amalgamation. No. 4, sunk 6 ft., depth 40 ft. This winze will be sampled during January. No. 5, sunk 9 ft., depth 84 ft. This winze was sampled from 40 to 80 ft. The following are the assays:— Depth, 40 ft., width of reef, 9 ins., assay values, 90.40 dwts.; depth, 45 ft., width of reef, 12 ins., assay value, 51.50 dwts.; depth, 50 ft., width of reef, 15 ins., assay value, 43.80 dwts.; depth, 55 ft., width of reef, 15 ins., assay value, 141.90 dwts.; depth, 60 ft., width of reef, 12 ins., assay value, 33.20 dwts.; depth, 65 ft., width of reef, 15 ins. (west), assay value, 29.40 dwts.; depth, 65 ft., width of reef, 12 ins. (east), assay value, 260.40 dwts.; depth, 70 ft., width of reef, 8 ins. (west), assay value, 1 dwts.; depth, 75 ft., width of reef, 12 ins., assay value, 7 dwts.; depth, 80 ft., width of reef, 15 ins., assay value, 58.70 dwts. Discarding the high assays, 141.90 at 55 ft., and 260.40 at 65 ft., the average assay value is 39.80 dwts. across 12.25 ins. No. 5 west drive, driven 15 ft. The following assays were made: 5 ft. in, width of reef 7 in., assay value, 13.50 dwts.; 10 ft. in, width of reef 6 in., assay value, 1.30 dwts.; 15 ft. in, No. reef only filling, 18 in., assay value, 1.60 dwts. No. 5 east drive, driven 20 ft. The following assays were made: 5 ft. in, width of reef, 12 ins., assay value, 5.20 dwts.; 10 ft. in, width of reef, 18 ins., assay value, 19 dwts.; 15 ft. in, width of reef, 15 ins., assay value, 15.40 dwts.; 20 ft. in, width of reef, 15 ins., assay value, 62.60 dwts. Average assay value 26.24 dwts. across 15 inches. Total development for December, 93 ft. 6 ins.

Prospecting and Rubble Workings.—A certain number of natives, not being mine boys, were employed prospecting and extracting rubble and float. A cutting 30 ft. long by 10 ft. deep, south of No. 1, has exposed float 8 ft. deep of an assay value of 8.60 dwts. Clearing out old workings, between No. 2 and No. 3 winzes is yielding a fair quantity of 10.00 dwts rubble. An assay of reef at bottom of old workings gave 10.40 dwts. across 36 inches.

January 16, 1914.

No. 5 Winze.—East drive.—Fair progress has been made. The reef is about 18 ins. wide. Last assay at 25 ft., 81 dwts. West Drive.—The reef is making again in end of drive. It is now about 6 ins. wide, panning 2 or 3 ozs. No. 3 Winze.—A fault is coming in on the east side of shaft. This has no doubt been the cause of the low values. Depth of shaft, 68 ft. The last two assays at 58 ft. and 63 ft. are: 58 ft., 5 dwts. across 18 ins.; 63 ft., 3.80 dwts. across 20 ins. The outcrop of the reef has been picked up about 40 ft. east of No. 3, it having been thrown south by the same fault which has now made its appearance in the bottom of the shaft. The reef pans 10 to 15 dwts. Driving on the intermediate level will be started at 74 ft. No. 2 Winze.—This has been partly timbered from the bottom of ancient workings. Sinking has been resumed until more mine timber arrives. The reef is about 12 ins. wide, panning 1 oz.

Government Gold Mining Areas.

The directors of the Government Gold Mining Areas, in their report for the quarter ended the 31st December, report the following development results. North East Shaft: The total footage driven, risen and sunk during the quarter was 2,523 feet, of which 652 feet were in main haulages, crosscuts and other points not on the reef. Of the footage sampled, 340 feet were on payable reef, averaging 27·2 inches width and 1[illegible] dwts. value; 756 feet were on unpayable reef, averaging 26·7 inches width and 2·4 dwts. value; and 300 feet were on reef partly exposed, averaging 47·4 inches width and 2·3 dwts. value. North West Shaft: The total footage driven, risen and sunk during the quarter was 2,707 feet, of which 1,141 feet were in the main haulages, crosscuts and other points not on the reef. Of the footage sampled, 560 feet were on payable reef, averaging 27·8 inches width and 10·7 dwts. value; 620 feet were on unpayable reef, averaging 13·6 inches width and 7·4 dwts. value; and 12 feet were on reef partly exposed, averaging 26·7 inches width and 3·3 dwts. value. South-East Shaft: The total footage driven, risen and sunk during the quarter was 1,656 feet, of which 1,234 feet were main haulages, crosscuts and other points not on the reef. Of the footage sampled 32 feet were on payable reef, averaging 44·5 inches width and 19·8 dwts. value; 110 feet were on unpayable reef, averaging 56·1 inches and 5 dwt. value. 1,360 feet pump station: 3,816 tons of rock were broken and hoisted during the quarter and the station is now nearly completed. 3,593 feet pump station: 1,327 tons of rock were broken and hoisted during the quarter. Work on both these stations has been greatly delayed owing to shortage of native labour. South-West Shaft: This shaft was sunk 35 feet during the quarter, attaining a total depth of 3,648 feet. The Main Reef was struck at 3,613 feet on October 1. The bottom leader of the Main Reef is pinched out over the greater part of the shaft, and the average value of the reef with partings was 1·5 dwts. over 76 inches. The main station has been cut at 3,522 feet depth, and another station has been cut at 3,592 feet; temporary ore bins have been cut and timbered at both these stations. The crosscut from the lower station cut the reef at 100 feet, and 37 feet of driving on reef to date shows an average reef width of 52 inches and an average value of 7·1 dwts. Good progress is being made with excavations and foundations for the mill. The capital expenditure during the quarter amounted to £97,362 5s. 1d.

Mining Examinations.

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Box 2061.

Rhodesian Section.

LATEST MINING NEWS.

The December Output—Dividends in 1913—Globe and Phœnix Ore Reserves—The Asp G.M, Co.—Charter Trust and Agency—Eldorado Banket.

The following is a list of dividends paid by Rhodesian Companies during 1913:—Gold Companies: Eldorado, £90,000; Giant, £13,104; Globe, £280,000; Lonely, £81,301; Rezende, £17,765; Susanna, £1,750; Umniati, £2,643; Pickstone, £1,800; Criterion, £1,250—£489,613. Trading Company: Bechuanaland Trading, £1,318. Coal Company: Wankie, £35,457. Finance Companies: Bechuanaland Exploration, £8,000; Bulawayo and General Exploration, £2,615; Charterland and General, £6,552; Matabeleland Asset Realisation, £335—£17,502. Base Metal Company: Rhodesia Chrome, £11,891—total, £555,781.

* * * *

The total value of Southern Rhodesia's mineral output for the month of December has been officially declared at £270,540—an increase of £996 when compared with the month of November. The figures for the two months read as follows:—November: Gold, £239,036; silver, £1,146; lead, £348; chrome iron, £20,068; coal (sales), £6,818; asbestos, £2,038; diamonds, £90—total, £269,544. December: Gold, £254,687; silver, £1,191; lead, £371; chrome iron, £5,175; coal (sales), £8,905; asbestos, —; diamonds, £211—total, £270,594. The whole of the increase in the month's gold output—which brings the total for the year to £2,903,268 as against £2,707,369 in 1912—is practically due to the improvement in the figures for the Hartley District, where an exceptionally good return was made by the Golden Valley (1,007 ozs. from 1,244 tons crushed), and where the re-entry of the Eileen-Alannah as a producer is to be noticed (with a return of 1,088 ozs. from 1,300 tons of rock treated). A table, showing the value of the monthly and annual gold outputs since January, 1911, together with the value of the other minerals recovered, is appended:—

	1911.	1912.	1913.
January	£207,904	£214,918	£220,776
February	203,056	209,744	208,744
March	231,947	215,102	257,797
April	221,296	221,476	241,098
May	211,413	234,408	243,452
June	215,347	226,867	240,303
July	237,517	240,514	249,302
August	243,712	239,077	250,576
September ...	225,777	230,573	250,429
October	218,862	230,072	247,068
November ...	214,040	225,957	239,036
December ...	217,026	218,661	254,687
Total Gold ...	£2,647,897	£2,707,369	£2,903,268
Other Minerals...	243,916	259,568	253,674
Total Value ...	£2,891,813	£2,966,947	£3,156,942

* * * *

The figures of the ore reserves at the Globe and Phoenix Mine, as at the 31st December last, were published on Monday. These read as follows: Tonnage, 180,757, of an average stoping value of 27.2 dwts., containing 245,829 ozs. gold, valued at 84s.—equal to £1,032,481. There is no official confirmation of the recently reported rich strike, but the rapid rise in the value of the shares has its significance.

* * * *

The 19th ordinary general meeting of the Tati Concessions, Limited, was held on Tuesday in mail week at 18, St. Swithins Lane, E.C. Mr. C. V. Thomas presided, and explained that the meeting was being held to comply with the Companies Acts. As the active steps being taken to put the company's current finances in a sound position had not yet been concluded, it was proposed that the meeting should be adjourned to a subsequent date in January. After a good deal of criticism, in which the Board were upbraided for withholding the accounts, a resolution adjourning the meeting was carried on a show of hands.

* * * *

The first report of the Union and Rhodesian Trust, covering the period from August 1, 1912, to October 31, 1913, states that developments to date at the Ptarmigan Mines, Vancouver, in which the company has a large holding, have disclosed several large bodies of high-grade ore. The company has, since the end of the financial year, entered into business in connection with the new goldfield at Kirkland Lake, in the Province of Ontario, Canada, and a company called Kirkland Lake Proprietary (Limited), has been formed to deal with same. The accounts for the period show total receipts, including £4,865 profit on realisation of shares in other companies, of £7,200. After deducting general expenditure £3,526, depreciation £54, and preliminary expenses £391, there remains a credit balance of profit and loss carried to balance sheet of £3,229.

* * * *

The annual meeting of the Asp Gold Mining Company, Limited, was held on Wednesday in mail week at the offices, 8, Old Jewry, E.C. The report for the year to June 30 last stated that, in addition to the loan of £10,000 referred to in the previous report, a further £5,700 had been borrowed from the Gold Fields Rhodesian Development Company since June 30 last. Development had been mainly restricted to the Western section of the Prince of Wales claims, on which the existence of three parallel payable lodes had been proved.

* * * *

The report and accounts of the Charter Trust and Agency, Limited, were issued in London on Monday last. These indicate that the directors recommend a dividend of 2½ per cent. for the half-year ended November 30th; that the sum of £2,000 has been written off; and that £6,613 is to be carried to the next account. The last distributions were at the same rate.

* * * *

The following cable was despatched to the London office of the Eldorado Banket Gold Mining Company on the 24th instant:—"Reef cut 12th level showing visible gold, width and assays will come forward as soon as available."

When communicating with advertisers kindly mention the *South African Mining Journal*.

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Note new address:—St. James' Mansions, Eloff Street.

RHODESIA'S MINERAL OUTPUT.

Details for December—Average Well Maintained.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of December, 1913, with comparisons and values:—

MATABELELAND.

	No. of Stamps.	Tons Treated.	Yield ozs.	Value. £
BULAWAYO DISTRICT—				
Abercorn I. (W. J. Lane)	2	150	61.96	260
Agincourt (H. L. Maidwell)	5 1P	309	271.55	1,140
Antelope G.M. (Rhod.), Ltd. ...	10P 2BM	2,691	1,098.18	4,612
Atlas (Est. R. Barkley deceased) ...	10	837	109.53	460
Do. (sands)	—	520	35.56	149
Belmont (A. D. Hall)	5	80	43.91	184
Do. (sands)	-	110	33.90	142
Blanket (Forbes Rhod. Synd., Ltd.)	15	1,020	124.06	521
Blue (J. Eisenhammer)	2	160	56.11	236
Bobs (Bobs Reef Syndicate)	5	220	21.83	92
Burton (S. H. Burns), sands		1,875	114.51	481
Bushtick Mines, Ltd.	21 3T	6,326	277.10	1,164
Do. (sands)	—	3,418	597.43	2,509
Do. (slimes)	—	3,007	363.73	1,528
[illegible] (D. and C. Syndicate)	10 1C	1,046	48.75	205
Do. (sands)	—	900	91.58	385
Do. (slimes)	—	146	41.41	174
[illegible] (S. and G. Syndicate)	1H	130	280.18	1,177
Champion H (R. Aserman)	5	456	78.39	329
Do. (sands)	—	255	76.36	321
Claremont (B. L. Whyte)	7	1,000	102.47	430
Clean Up (H. W. Beancroft)	5	160	78.88	328
Colleen Bawn (Colleen Bawn Syndicate, Ltd.)	6 1P	811	33.59	141
Do. (sands)	—	425	46.17	194
Do. (slimes)	—	462	109.13	458
Cottage (Cranleigh Syndicate) ...	2	130	43.22	181
Do. (sands)	—	120	15.21	64
Criterion Gold Mines, Ltd.	10	1,330	541.09	2,273
Do. (sands)	—	882	131.68	553
Dam (W. H. Robinson)	2	92	14.11	59
Dick's Luck A (A. Adams)	7	300	38.52	162
Discord (W. Reid)	(5)	125	23.23	98
Donave A (W. K. Early)	3	14	3.88	16
Durban (M. H. Brooks), other sources	-	-	3.73	16
Eagle A (Macdonald and Co.)	10	866	162.26	681
Do. (sands)	—	128	8.56	36
Elumba A (Cooper and Bosomworth)	5	550	192.07	807
Do. (sands) ...	—	350	49.32	207
Euphorbia (D.W.K. Syndicate)	1 H	16	6.54	27
[illegible] (H. S. Henderson)	5	499	270.55	1,136
Do. (sands)	—	260	7.56	31
Fleur (E. E. Beecroft)	5	306	111.48	468
Fred (Trans. and Rhod. Est., Ltd.)	10 2P	1,106	884.27	3,714
Do. (sands)	—	1,106	196.67	826
Godwin (Barrett and Stacey)	5	98	104.46	439
Golden Butterfly (Wheeler, Davis and Rintoul)	5	411	225.56	947
Imani (E. Rochfort)	2	183	117.26	492
Imbusine D (Cummings and Berry)	3	92	72.11	303
Intabanenda (Est. B. Smallie, dc'd.)	5	245	54.62	229
Do. (sands)	—	170	21.44	90
Jumpers (J. P. McCay)	5	330	231.37	972
Kameel (New Rhod. M., Ltd., and A. M. Rhodes)	5	130	153.85	646
L (J. A. Warwick)	5	577	111.80	470
Li Hang Chang (G. Leach)	3	97	11.15	47
Limes (D. Vincent)	5	100	15.09	63
Lone Hand (Armstrong, Fisher and Alexander)	5	485	197.61	830
Do. (sands) ...		420	117.46	493
Lonely Reef G.M. Co., Ltd.	20 3T	4,610	1,148.29	4,823
Do. (slimes)	—	4,610	2,524.99	10,605
Manx Cat (Manx Syndicate)	4	300	76.52	321
Mary and Alice (R. Dodman)	3	24	13.06	55
Master Cecil (Branson and Schabbel)	3	12	12.16	51
Matabele Queen's Co., Ltd.	10	1,900	331.84	1,394
Do. (sands)		1,900	370.94	1,554
Do. (slimes)		680	77.18	324
[illegible] Luck A (C. M. Reid)	5	273	39.26	165
[illegible] (L. W. Angus) ...	2	200	26.72	112
Do. (sands)		200	11.66	49
[illegible] (J. D. [illegible])	3H	325	272.67	1,145
New Eclipse (J. R. Stewart)	5	1,000	170.69	717
Do. (sands)		320	22.69	95
New Insimbi (P. G. Challen)	5	80	116.54	489
Old Nic (Chart. and General E. and F. Co., Ltd.)	15 4P	2,126	608.67	2,557
Do. (sands)	—	1,144	99.61	418
Peach A (C. Salomon)	5	160	442.94	1,860
Penzance (Penzance Trib. Synd.)	2	131	33.04	139
Do. (sands)	—	320	33.27	140
Planet (Triggs and Huntley)	5	340	193.41	812
Poort (J. R. Barnes)	2	120	21.79	92
Princess (C. A. Abbott)	2	69	15.08	63
Riverside (R. Martindale)	2	60	29.03	122
Do. (sands)	—	56	8.97	38
Roan (J. Robinson)	2	102	26.17	110
Rose 2W (W. A. Carter), sands ...	—	320	16.08	68
Rous 1 (A. G. Hadingham)	2	105	58.43	245
Rubble (J. Gilpin), clean-up	—	—	35.91	151
S. Felix (A. W. Wilson)	5	301	107.12	450
Do. (sands)	-	208	34.83	146
Susanna Mines, Ltd.	8	693	173.56	729
Do. (sands)	-	545	34.57	145
Do. (slimes)	—	131	46.56	196
Teutonic (Macdonald and Bonshor)	5	674	249.11	1,046
Do. (sands)	—	700	43.37	173
Tuff Nut (King's Syndicate)	5	520	156.13	656
Do. (sands)	—	370	36.26	152
Winifred (Rhod. M.M. Exchange)	1 I.R.	110	60.34	253
Do. (sands)	—	75	44.19	186
Worthless 2 NW (Forward (R) G. M., Ltd.)	4	116	22.90	96
Bualwayo District Total...			16,351.74	68,662
GWELO DISTRICT—				
Ardpatrick (C. Maleham)	3	370	134.05	563
Arizona No. 2 S (L. R. Evans	2	85	42.24	177
Bee (Bee Syndicate)	2	135	55.19	232
Cactus I. (Renton and Gray)	5	670	101.81	428
Do. (sands)	—	550	101.81	428
Camelia (S. Levine)	10	107	106.42	447
Collingwood (Pini and Wearing) Ball Mill	(4 GR)	1,202	138.67	582
Csardas (Wolshall Syndicate)	10	610	566.75	2,380
Do. (sands)	—	510	105.13	442
Do. (slimes)	--	100	11.15	47
Denbeigh (G. B. Havnar)	5	70	5.36	22
Elysion (Holmes and Urquhart) ...	5	470	43.70	183
Excelsior 1 W (G. B. Havnar)	5	100	2.13	9
Gaika G.M. Co., Ltd.	5 1C	2,825	1,459.79	6,131
Do. (sands)	—	1,220	74.96	315
Do. (slimes)	—	1,014	47.11	198
Gartley (A. J. Grant)	2	84	55.54	233
Do. (sands)	—	75	21.89	89
Globe and Phoenix G.M. Co., Ltd.	40 10P	6,271	8,512.52	35,752
Do. (concentrates)	—	289	646.90	2,717
Do. (slimes)	—	2,506	717.40	3,013
Gothic (Mashonaland Agency, Ltd.)	15 2P	1,070	432.69	1,835
Do. (sands)	—	390	54.11	229
Gretna Green (M.L. Price)	5	290	114.85	482
Do. (sands)	—	710	118.94	500
Ingondomo (F. C. Luxat)	2 & 1 H	616	169.50	712
Do. (sands)	—	400	36.89	155
Invulnerable (W. H. Steele)	5	40	8.24	35
Kaka Main (I. Maleham)	5	475	61.86	260
Kings (Phil S. Warden)	5	342	74.46	312
Do. (sands)	—	887	63.52	267
Loongana (A. Malcolm)	5	270	77.25	324
Moonie River (Yellow Jacket Syn.)	5	334	123.72	520
Moss (James and Morrisby)	2	360	212.62	893
Multum (W. Cock)	3	16	8.43	35
New Dunraven G.M., Ltd.	5	850	82.20	345
Do. (sands)	—	780	47.30	199
North Bonsor (Cornish Syndicate)	20	2,235	323.46	1,358
Do. (sands)	—	1,330	155.61	654
Paradox (Bolt and Franks)	5	180	60.83	255
Pompei (F. Brorson)	2	250	64.03	269
Snowed Up 1S.E.(James&Morrisby)	5	576	150.72	633
Stranger (J. M. Havnar)	2	76	48.55	204
Surprise (B. & P. Syndicate)	10	1,763	160.16	673
Tebekwe 1 (A. N. Tyrrell)	15	780	240.93	1,012
Tebekwe B 2735a (H. C. Baker) ...	10	283	50.86	214
Twin Nugget 1 (Cannell & Bogwald)	2	72	32.19	135
Veracity (J. Fischer) slimes)	—	820	92.72	389
Wanderers (Selukwe) G.M., Ltd. ...	4GR	11,904	1,523.55	6,399
Gwelo District Total			17,597.45	73,927

MATABELE TOTAL ... ... 33,949.19ozs.

VALUE £142,589

MASHONALAND.

	No. of Stamps.	Tons Treated.	Yield. ozs.	Value. £
HARTLEY DISTRICT—				
Acorn Gold Mines, Ltd.	5	492	135.34	568
Do. (sands)	—	300	69.35	291
Agnes (P. S. Triggs)	5	520	417.61	1,754
Alabama (Rix and Reynolds)	3	40	21.94	92
Amaroso (C. H. Wheildon)	5	666	131.05	550
Do. (sands)	—	385	52.28	220
Avice (Sun Syndicate), sands	—	340	25.14	106
Battlefields (Rhod.) Ltd., (Minnaar and McArthur)	2C	1,705	144.97	609
Do. (sands)	—	1,364	182.29	766
Do. (slimes)	—	341		
Blue Rock (Blue Rock Synd.)	2	250	42.70	179
Do. (sands)	—	175	6.76	28
Brilliant (Mabel's Luck Synd.)	7 1P	1,040	406.48	1,707
Do. (sands)	—	352	70.66	297
Buller (J. Laing) slimes	—	280	87.54	368
Cardiff (H. Tilbury)	—	—	2.91	12
Chadshunt (C. H. Wheildon)	(5)	60	57.41	241
Cheshire Cat (Arnold and Windley)	5 1P	431	130.29	548
Do. (sands)	—	275	37.65	154
Do. (slimes)	—	100		
Concession and W. Exten. (C. E. Simpson)	5 1C 2P	2,446	480.36	2,018
Do. (sands)	—	1,892	104.98	441
Dalny (Macdonald and Sale)	5	947	48.23	203
Do. (sands)	—	435	141.44	594
Do. (slimes)	-	502		
Dalny 1W. (Shagari Mines, Ltd.)	5	450	45.15	190
Do. (sands)	—	205	40.12	168
Dreadnought B. (W. E. Masters)	1 C	357	144.57	607
Eiffel Blue & E. Ext. (Willoughbys	10	1,522	684.91	2,877
Do. (sands)	-	820	56.71	238
Eileen Alannah Mining Co., Ltd.	10	1,300	1,088.05	4,570
Enny Ext. (Ellsmoor & Goodyer)	5	345	133.65	561
George (Heroine G.M. Co., Ltd.)	10	1,098	45.01	189
Giant Mines of Rhodesia, Ltd.	30 2T	11,000	2,221.41	9,423
Glasgow Mines, Ltd.	5	366	218.58	918
Do. (sands)	—	188	62.63	263
Glencairn No. 3 (Glenrosa Synd.)	4	240	177.94	747
Do. (sands)	-	160	13.86	58
Golden Valley (J. Mack)	10	1,224	826.38	3,471
Do. (sands)		672	180.96	760
Hepworth No. 1 (L. Heilman)	2	81	34.87	146
Hero 2 (Storey and Steele)	1H	68	30.31	127
Inez (Harill and Smith)	10	600	120.46	506
Do. (sands)	—	375	40.94	172
Invar (H. Moser)	5	540	56.59	238
Jessie Palmer (Crown Synd.)	2	100	23.02	97
Do. (sands)	—	80	15.42	65
Johnnie's Folly (G. R. Laws)	(5)	41	31.99	134
Juno (H. R. Nicholl)	5	310	72.28	304
Do. (sands)	—	168	27.00	113
Kanyemba (Kanyemba Synd.)	5	500	184.90	777
Do. (sands)	—	250	35.26	148
Kenley (T. McGarry)	2	24	7.61	32
Mali (McAdam and Purves)	2	138	30.18	127
Midwinter (Midwinter Syndicate)	2	271	77.63	326
Do. (sands)	—	360	41.47	174
Orcus (St. Kilda Synd.)	1 D	—	3.97	17
Owl (A. Rolfe)	10	1,306	494.76	2,078
Do. (sands)	—	1,100	185.80	780
Do. (slimes)	—	280		
Pickstone Gold Mines, Ltd.	10 1C	4,881	670.50	2,816
Do. (sands)	—	1,980	254.85	1,070
Pioneer (Hartley Pioneer Synd.)	5	200	52.20	219
Pomposo (J. Knott)	5	390	127.89	537
Revealed 7 (S. Smith)	5	40	11.23	47
Rosaline A. (J. F. Meade)	5	180	36.87	155
Saxon 1 (Sun Synd.) sands	—	420	19.88	83
Seigneury (Seigneury Synd.)	5	446	203.47	855
Do. (sands)	—	280	18.31	77
Shepherds (Phoenician (Rhod.) Co., Ltd.)	5 1T	814	250.38	1.052
Do. (sands)	—	814	259.37	1.089
Sid (Sebakwe and District Mines, Ltd.)	5	490	143.12	601
Do. (sands)		390	38.22	161
St. John del Rey (C. G. Downie)	5	348	40.60	171
Thistle-Etna G.M., Ltd.	1C	2,533	931.07	3,910
Do. (sands)	—	2,186	213.90	898
Do. (slimes)	—	583	56.78	238
Trinidad 1 (T. McDowell)	4	450	80.73	339
Do. (sands)	—	100	22.93	96
Village Queen No. 1 (C. G. Downie)	(5)	321	18.99	80
Warthog (Selborne Synd.)	5	120	39.56	166
Do. (sands)	-	56	4.54	19
Washington (I. J. Minnaar)	5	450	409.40	1,719
Do. (sands)		370	34.84	146
Hartley District total			14,191.37	59,691
LOMAGUNDI DISTRICTS.—				
Ayrshire (J. E. Parker) sluicing	—	913	86.45	363
Eldorado Banket G.M. Co., Ltd.	20 2C 8P	8,004	2.101.56	8.913
Do. (sands)	—	7,536	868.07	3,681
Linnett (A. L. R. Morkel)	2	[illegible]	111.52	459
Lone Hill (F. B. Platt)	2	126	31.39	132
Mediteraneo (Perhat and Baburizza)	2	200	62.93	264
Lomagundi District Total			3,261.94	13,783
MAZOE DISTRICT.—				
Alice (Rhod. G.M. and I. Co., Ltd.), clean up	—	—	54.46	229
Botha H. (Cunningham and Allison) sands	—	500	62.24	261
Dispute (J. H. Hall) sands	—	280	64.41	271
Glandore (Harries and Cooke)	2	250	105.46	443
Goth B. (Goth Syndicate) sands	—	—	13.68	57
Honest (G. Brown)	3	120	46.07	193
Hope (Hope Tailings Synd.) sands	—	860	118.12	496
Jumbo G.M. Co., Ltd.	30	3.300	652.63	2,774
Do. (sands)	—	2,150	284.65	1,210
Do. (slimes)	—	1,150	91.69	390
Kimberley (Mash.) G.M. Co., Ltd.	6 2T	3,600	803.96	3.413
Do. (sands)	—	1,500	321.71	1,358
Do. (slimes)	—	2,100	265.55	1,121
Last Kick (Dominion G.M. Rhod., Ltd.)	5	50	30.55	128
Micky (Micky Syndicate)	2	258	141.12	593
Mitre 8 (Bishop's Synd.)	1D	16	15.45	65
New Found 1N. (D. H. Curry) sands	—	600	92.24	387
Oceola G.M. Co., Ltd.	5	583	203.71	856
Do. (sands)	—	280	25.28	106
Pompey A (Violet Synd.)	5	217	151.06	634
Puff Adder (Puff Adder Synd.)	2	186	64.96	273
Venus (Giles and Southey)	2	305	195.80	822
Xmas 1 N.W. (D. Pearce)	2	220	53.92	226
Mazoe District Total			3,858.72	16,306
SALISBURY DISTRICT.				
Arab (Arab Synd.)	1D	12	14.02	59
Arcturus (L. Chiappini) sands	—	500	84.33	354
Banker (Dyason and Wells)	3	24	6.81	29
Cross-Your-Luck (S. T. L. Synd.)	2	70	43.36	182
Inyague 3 (Hodge and Von Hagen)	2	78	34.63	145
Joker (Manduza Synd.)	2	204	189.64	796
Kypoo (A. E. Ericson) pannings	—	—	2.23	9
Louise Grand (H. S. Plant)	1H	1,050	89.37	376
Do. (sands)	—	1,050	43.16	181
Mont d'Or (Claxton and Russell)	2	144	64.16	269
New Full Back G.M. Synd. Ltd.	2	64	11.10	47
Old Loyalty (Shamva Ilex G.M. Co., Ltd.)	5	350	227.20	954
Do. (sands)	—	392	48.98	206
Salisbury District Total			858 :99	3,607
UMTALI DISTRICT.				
Arthur (M. A. Hoole)	5	45	22.68	95
Cairndhu 2 W (E. K. Evans) sands	—	80	5.06	21
Champion (J. Buchanan)	5	760	66.21	278
Do. (sands)		[illegible]	195.89	814
Do. (slimes)		274		
Elgin (Umtali Waterfall Synd.) sands	—	—	17.27	73
Kent (E. Evans)	5	603	302.40	1,270
Do. (sands)	—	340	36.52	154
Kenya (F. Young)	3	82	18.97	80
King's Daughter D.B. (Umtali Waterfall Synd.) slimes	—	830	95.07	399
Monte Carlo (H. Pollack)	1 H	150	22.77	96
Montezuma 2 (Montezuma G.M. Co. Ltd.)	5	600	146.85	621
Pilgrim 2 E (J. Meikle)	5	550	89.38	375
Quagga (Quagga Synd.)	5	250	62.23	261
Rezende Mines, Ltd.	110	15.450	1,644.63	6,978
Do. (concentrates)	—	183	639.08	2,679
Do. (sands)	—	3.052	464.11	1,969
Two Sisters (F. E. Markham)	2	60	22.43	94
Umtali D (Umtali Waterfall Synd.)	10	612	143.35	602
Do. (sands)		155	24.27	102
Do. (slimes)		155		
Umtali District Total			4.017.17	16.961
VICTORIA DISTRICT.—				
Dundee (P. A. Nightingale)	3	60	12.81	54
Texas (G. Scott)	10	1.200	291.44	1.224
Do. (sands)	—	700	112.34	472
Victoria District Total			416.59	1.750
Mashonaland Total			**26,604.78 ozs.**	
Value			**£112,089**	
Grand Total Gold Output			**60,553.97 ozs.**	
Value			**£254,687**	

OTHER MINERALS

Silver, ozs.	11,602.22	£1,191
Lead, tons	23.59	371
Chrome iron, tons	2.318.4	5.175
Diamonds, carats	59.75	211
Coal, tons	26.431	8,905
Total value of Mineral Production		£270.540

DECEMBER GRADE, COSTS AND PROFITS.

Chamber of Mines' Analysis.

THE following tabulation of the operations of the mines of the Transvaal contributing to the gold production is supplementary to the details published by the Chamber of Mines in its declaration on the 10th of the month:

THE WITWATERSRAND.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
1. Aurora West United ...	18,647	25	8	19	5	13,811	4,845	6	10
2. Bantjes Consolidated ...	27,334	24	10	22	9	25,072	2,082	1	11
3. Brakpan Mines	65,666	28	1	18	8	43,223	21,869	9	5
4. City Deep	73,664	38	3	24	10	46,863	24,905	13	2
5. City and Suburban ...	46,950	33	9	21	7	27,120	19,110	15	2
6. Cons. Langlaagte	56,567	27	7	17	5	35,353	20,602	10	2
7. Cons. Main Reef	30,393	33	2	22	4	20,435	9,593	10	6
8. Crown Mines	237,941	28	10	15	6	128,014	108,539	13	2
9. Durban Roodepoort ...	15,147	21	6	15	8	11,039	4,109	5	10
10. Durban Rood. Deep ...	30,533	26	8	24	3	27,143	3,062	2	10
11. East Rand Proprietary.	212,106	32	2	20	10	132,727	69,941	11	0
12. Ferreira Deep	99,010	36	2	17	2	46,889	51,204	18	9
13. Geduld Proprietary ...	30,308	30	3	22	11	22,621	7,589	7	8
14. Geldenhuis Deep	63,601	28	10	24	2	52,685	9,926	4	7
15. Ginsberg	18,363	25	2	19	5	13,963	4,104	5	9
16. Glencairn Main Reef ...	14,663	14	2	12	7	12,466	1,570	1	7
17. Knight Central	25,019	22	11	19	0	20,766	3,930	3	7
18. Knights Deep	66,413	17	8	13	4	49,860	12,689	3	5
19. Langlaagte Estate ...	58,682	19	10	17	10	43,890	14,190	5	9
20. Luipaardsvlei Estate ...	18,410	20	2	18	1	16,416	1,782	2	0
21. Main Reef West	25,117	28	5	22	4	19,771	5,020	5	8
22. May Consolidated	9,774	17	2	15	0	8,538	1,211	2	2
23. Meyer and Charlton ...	35,549	47	5	17	3	12,932	22,532	30	0
24. Modderfontein B. ...	57,026	36	9	17	0	26,302	30,378	19	7
25. New Goch	29,866	21	4	16	9	23.417	6,356	4	6
26. New Heriot	9,460	28	8	37	5	11,790	*2,577	*8	2
27. New Kleinfontein ...	64.090	25	9	17	0	42,199	21,182	8	6
28. New Modderfontein ...	77,555	40	2	17	2	33,113	44,050	22	9
29. New Primrose	32,151	25	1	12	4	15,377	15,974	12	9
30. New Rietfontein	13,041	18	0	20	4	14,737	*1,698	*2	4
31. New Unified	15,785	24	0	16	4	10,641	4,933	7	7
32. Nourse Mines	60,067	29	4	22	11	47,056	12,644	6	2
33. Princess Estate	28,264	24	6	23	0	26,456	1.720	1	6
34. Randfontein Central ...	223,367	24	2	17	8	161,061	60,886	6	8
35. Robinson	94,397	35	2	14	8	39,080	53,880	20	4
36. Robinson Deep	74,042	30	3	16	6	40,510	28,004	11	5
37. Roodepoort United ...	21.850	19	0	18	2	20.803	1,119	1	0
38. Rose Deep	75,975	25	6	16	11	50,531	25,008	8	5
39. Simmer and Jack ...	73,112	21	4	11	11	40,940	29,413	8	7
40. Simmer Deep	44.831	15	5	15	3	43,617	669	0	3
41. Spes Bona Tribute† ...	4,519	17	3	—		—	—	—	
42. Van Ryn Estate	52,697	26	3	15	11	31,007	21,691	11	1
43. Van Ryn Deep	62,017	33	6	19	2	35,562	26.454	14	3
44. Village Deep	62,735	27	9	19	6	43,758	18,377	8	2
45. Village Main Reef ...	69,731	40	5	18	1	30,534	38,432	22	10
46. Vogelstruis Estate... ...	13,622	22	4	20	1	11,781	1,864	8	2
47. West Rand Central ...	3,963	35	10	31	4	3,001	960	10	0
48. West Rand Cons.... ...	26,523	26	4	21	11	21,631	5,004	5	1
49. Witwatersrand	48,785	24	8	14	5	28,064	20,723	10	8
50. Wit. Deep	63,555	27	9	16	0	35.692	26,723	12	0
51. Wolhuter	40.141	26	1	17	0	26,239	13,393	8	8
Miscellaneous producers	7,359	—		—		—	—	—	
Witwatersrand totals ...	2,730,383	27	4	17	10	1746496	929966	9	6
*Loss. †Private.				50 cos.		50 cos.	50 cos.	50 cos.	

The apparent small disagreement between working costs and profits per ton milled and value per ton is due to inclusion of value won from accumulations and by-products.

OUTSIDE DISTRICTS.

	Total value recovered.	Value recovered per ton milled.		Total working cost per ton milled.		Total working costs.	Working profit.	Working profit per ton milled.	
	£	s.	d.	s.	d.	£	£	s.	d.
HEIDELBERG—									
1. Nigel	19,578	29	0	25	1	16.315	3,043	4	8
2. Sub Nigel	11,367	47	10	32	4	7,682	2,072	8	9
BARBERTON—									
3. Barrett	833	8	2	—		—	—	—	
4. Sheba	14,238	53	3	37	3	9,971	4,268	15	11
5. Worcester	4,294	18	6	15	1	3,500	783	3	4
KLERKSDORP—									
6. Quest	2,948	18	1	14	3	2,334	616	3	9
LYDENBURG—									
7. Ceylon Lydenburg ...	892	30	9	29	9	864	17	0	7
8. Glynn's Lydenburg ...	8,873	46	2	18	11	3,637	5,138	26	8
9. Transvaal G.M. Estates	38,854	57	2	22	11	15,566	22,805	33	8
Miscellaneous producers	25,678	—		—		—	—	—	
Total (outside districts)	127,555	39	7	24	6	59,869	38,742	15	10
				8 cos.		8 cos.	8 cos.	8 cos.	
Grand totals	2857938	27	7	18	0	1806365	968708	9	7
				58 cos.		58 cos.	58 cos.	58 cos.	

A comparison of values recovered per ton milled, working costs and profits per ton with November shows that the value recovered on the Witwatersrand for December was 27s. 4d.; for November, 27s. 6d., the same as for October. Working costs in December were 17s. 10d.; in November 17s. 11d.; in October 17s. 9d.; in September 17s. 10d.; in August 17s. 7d.; in July 19s. 4d.; in June 17s. 8d.; in May 17s. 7d.; in April 17s. 11d.; in March 17s. 8d.; in February 18s. 3d.; and for both January and December 18s.

For January the tonnage milled was 2,296,948 tons; for February, 2,100,137 tons; for March, 2,321,254 tons; for April, 2,301,099 tons; for May, 2,366,726 tons; for June, 2,177,354 tons; for July, 1,873,930 tons; for August, 2,162,807 tons; for September, 2,035,318 tons; for October, 2,073,909 tons; for November, 1,995,573 tons; and now for December, 1,963,327 tons. In the outside districts the total tonnage milled was 51,031, making a total for the Transvaal of 2,014,358 tons.

The total dividends declared for 1913 to date are: Witwatersrand, £8,194,099; outside, £391,333; total, £8,585,432.

May Consolidated.

During the quarter ended 31st December the May Consolidated milled 37,950 tons for a profit of £5,410 0s. 6d., equal to 2s. 10·2d. per ton milled. No capital expenditure was incurred. Ore in bins at 1st October, 1913, 300 tons; ore sent to sorting house, 42,115 tons; total, 42,415 tons; waste sorted out (equal to 10·4 per cent.), 4,365 tons; total, 38,050 tons; sorted ore crushed during quarter, 37,950 tons; ore in bins at 31st December, 1913, 100 tons.

Geduld Proprietary.

During the quarter ended 31st December the Geduld Proprietary Mines milled 59,850 tons for a profit of £20,292 1s. 7d., equal to 6s. 9·4d. per ton milled. The expenditure on capital account amounted to £9,081 3s. 5d.; the amount has been expended on the enlargement of the plant and arrangements necessary in connection therewith. Mine development redemption charged to working expenses, £9,725 12s. 6d.; expended on mine development, £7,728 16s. 4d.; redeemed in excess of actual expenditure, £1,996 16s. 2d. Driving, 752 feet; winzes, 305 feet; raises, 470 feet; crosscuts, 155 feet; total, 1,682 feet. For the three months ended 31st December the footage sampled on the reef totalled 1,125 feet, assaying 9·1 dwts. over 38·7 inches.

Frank Smith Diamonds.

The washing results at the Frank Smith mine for January were as follows: 63,707 loads washed, yielding 2,310 carats, including six stones of good quality and weighing 12¼, 10¼, 15½, 11, 10, and 10 carats respectively. The output for the last quarter of 1913 was as follows:—October, 1,159 carats; November, 1,632 carats; December, 1,815 carats.

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MINING MEN AND MATTERS.

Mr. R. C. Warriner has resumed his duties as General Manager of the Crown Mines.

* * * *

Mr. B. Madew, who is leaving the Rand, was entertained to a farewell dinner on Tuesday night.

* * * *

Professor Yates's new courses for managers, mechanical and electrical engineers, commence this month, and enrolments are now being effected.

* * * *

Mr. E. J. Way, who parted company with the Anglo-French Exploration Co., Ltd., at the beginning of the year, has been appointed Consulting Engineer to the Machavie G.M. Co., Ltd.

* * * *

The late Resident Chief Engineer and Chief Electrician of the Consolidated Main Reef Mines and Estates, Mr. H. W. Clayden, having accepted the appointment of Consulting Electrical Engineer of the mines controlled by the General Mining and Finance Corporation, Mr. Samuel McChesney, late Chief Engineer of the Meyer and Charlton Mine, and the Cinderella Consolidated Mine, has been appointed to the Consolidated Main Reef Mines and Estates. Mr. S. McChesney is the President of the Association of Certificated (S.A.) Mechanical Engineers.

* * * *

The postponed eighteenth annual general meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday, 16th February, 1914, at 8.30 p.m. Business: (1) To receive and consider the annual report and statement of accounts for the year ending 31st December, 1913. (2) To elect twelve members of Council in place of Messrs A. von Dessauer, A. L. Hall, H. S. Harger, G. G. Holmes, H. Kynaston, J. G. Lawn, H. B. Maufe, E. T. Mellor, E. H. V. Melvill, A. W. Rogers, D. Wilkinson, and R. B. Young, who retire under the rules of the Society. (3) To elect a President, Vice-Presidents, and Honorary Secretary for the ensuing year. (4) To elect an auditor for the ensuing year. Mr. A. L. Hall will deliver his Presidential address.

Pilandsberg Diamonds.

Mr T. L. Day (secretary of the Pilandsberg Diamond and Minerals, Ltd.) has forwarded the following preliminary report received from Mr. H. S. Harger, who is at present at the mine. The directors have taken immediate steps to give effect to the recommendations made. Mr. Day says that the diamonds recovered, taken as a parcel, are valued at over 60s. per carat:

"Saltpetrepan, January 24, 1914. I have now been resident for two days on your property, Saltpetrepan, during which time I have closely studied the nature of your ground, and your method of treating same. I have no hesitation in saying that you are throwing away a large percentage of your diamonds, both in the tailings and cylinder lumps. It is perfectly clear that your washing pan is only capable of retaining a small percentage of the deposit, and diamonds, which the ground contains on account of its inability to disintegrate the lumps. As the ground leaves the mine it is very wet and clayey in nature, and in consequence of its condition a high percentage of the ground is formed into small balls of clay, which pass through the machine without breaking up, and carrying with them a very large amount of heavy deposit and diamonds. This I proved to my entire satisfaction by setting up a five foot pan below your tailings shoot and testing your tailings as they flowed out direct from the elevator for seven hours. From the result obtained I am of opinion that nearly 50 per cent. of your ground passes through the machine without releasing its contents of garnet, ilmenite and diamonds. I form this opinion from the fact that your tailings deposit was as heavy as your machine deposit, and produced four diamonds, including a fine white stone of nearly half a carat. The result of the test satisfies me that your gear must be altered and remedied at once, and after full discussion of all points with Mr. Burden, your consulting mechanical engineer, I advise you strongly to erect immediately a tube mill of special design to suit the requirements of your ground, so as to obtain a fair and proper yield in diamonds. I regard the yield obtained, viz., 47 carats from 430 loads, as very satisfactory in the circumstances, which, as regards your plant are all too unfavourable for ground of such a wet and clayey nature, and I feel quite satisfied that your yield will much improve when the tube mill has been installed. You will then be in a position to treat the whole of the ground which goes to the washing machine, whereas at present about 35 per cent. of the ground passes out of the screening cylinder in the form of big lumps of pure soft yellow ground, and a further 15 per cent. as small lumps and clay balls pass out as tailings. I regard further as very satisfactory the parcel of diamonds recovered to date. Although there are many small stones in the parcel, you have a very gratifying percentage of big stuff, as seen in the presence of one piece of cleavage of six carats; one stone of four carats; three stones of three carats; and several of one carat and over. The foregoing will compare very favourably with most mines when the size of the parcel is taken into consideration." I am remaining on your property for another week for the purpose of studying your mine and making a careful geological inspection of the entire property. When this work has been completed I will report to you in full."

The best "Reef Traveller" is the *South African Mining Journal.*

MANICALAND GOLD OUTPUT IN 1913.

The following table shows the gold produced in Manicaland during the year 1913:—

Name of Claims and Present Owner.	Gold Produced.		Value.		
	Fine Gold. Ozs.	Fine Silver. Ozs.	Fine Gold. £ s. d.	Fine Silver £ s. d.	Total. £ s. d.
REEF BATTERIES.—					
Bragança (Andrada Mines, Ltd.)	4,412.63	1,877.87	18,533 8 2	178 6 0	18,711 14 2
Central Welcome (Inhamucarara Gold Mines, Ltd.)	82.04	27.49	344 10 7	2 8 0	346 18 7
Chimezi-Rhodes-Banket (A. Gasper Dias Pereira)	129.96	33.47	545 15 6	2 13 5	548 13 11
Firenza (L. Hands)	103.27	22.33	433 11 1	1 18 10	435 9 11
Guy-Fawkes (Mozambique Macequece, Ltd.; tributor, G. Aubert)	97.52	13.72	409 8 7	1 3 10	410 12 5
South-Firenza (The Chesterford Gold Mining Syndicate)	214.91	35.15	902 8 4	3 1 0	905 9 4
Therese (A. Oertel)	5.48	1.14	22 19 8	0 1 11	23 1 7
Wednesday (W. Francis)	14.40	3.11	60 8 10	0 5 5	60 14 3
Total	5.060.21	2.014.28	21.252 10 9	190 3 5	21,442 14 2
CYANIDE.—					
Bragança (Andrada Mines, Ltd.)	123.28	124.39	517 14 0	11 15 1	529 9 1
Chimezi-Rhodes-Banket (Antonio Gasper Dias Pereira)	130.99	34.92	550 1 5	3 0 9	553 2 2
Total	254.27	159.31	1,067 15 5	14 15 10	1,082 11 3
CONCENTRATES.—					
Bragança (Andrada Mines, Ltd.)	355.55	1,262.02	1,510 16 4	143 11 5	1,654 7 9
Guy-Fawkes (Mozambique Macequece, Ltd.; tributor, C. Aubert)	29.20	43.04	124 2 3	4 19 4	129 1 7
Total	384.75	1,305.06	1,634 18 7	148 10 9	1,783 9 4
Grand Total	5,699.23	3,478.65	23,955 4 9	353 10 0	24,308 14 9

Engineering Notes and News.

PROGRESS IN THE APPLICATION OF COMPRESSED AIR.*

By ROBERT PEELE.

No marked improvements or radical departures in practice are to be noted for the past year, in the production, transmission, and use, of compressed air for mining service. The field of application of compressed air power transmission, however, is continually widening in connection with the arts and manufacturers, as well as in mining. In foundry work, pneumatic hammers have become indispensable for compacting large moulds. This practice, which began about 1908, is now common in all foundries of any importance, and many different types of hammer are in use. The applications of compressed air have also extended in other directions, for foundries and machine-shops, as adjuncts to the main power-plant.

Progress in the use of electric drives for air-compressors has continued. It is unquestionable that, whenever electric current is obtainable at low rates, as from a central power-plant, both first cost and operating cost are reduced, as compared with steam-driven compressor plants. The installation of such plants for compressed-air hoisting engines, which began at the mines of the Miami and Anaconda companies in 1911, has given satisfactory results. Seven of the main Anaconda steam hoists were changed to compressed air drive in 1911 and 1912, namely, at the Mountain View, High Ore, Diamond, Leonard, West Gray Rock, Tramway, and Pennsylvania shafts. During the past year the work of remodeling on the same lines the plants of all the remaining Anaconda shafts has been in progress. Ultimately, at this mine, there will be 9 main and 12 auxiliary hoists operated by compressed air. Tests on the Mountain View hoist (the first to be run on the new system) showed a total mechanical efficiency, without reheating, of 36.37 per cent.; with reheating, something over 50 per cent. This practice is likely to be followed at other properties where a number of hoists can be run from central electric and compressor plants. At the Copper Queen mine, five direct-acting main hoists, and two geared hoists have recently been converted to the use of compressed air, the old boiler plants being utilized as receivers. The air is reheated to 275 deg. Fahrenheit.

The increase in the use of hammer-drills has been general in this country for stoping and raising and sometimes shaft-sinking. In South Africa, also, where their introduction was at first slow, recent reports show that they are growing in favour. A number of new designs, and modifications of the older patterns, have lately been put on the market.

In connection with a new method for putting down large diameter drive pipes for foundation work, by means of the Goubert pile-driver, compressed air is used for cleaning out the pipe. As the pipes are to be filled with concrete, the material within them must be completely removed. For this purpose, at intervals of every two or three feet, the driving is stopped, a small air-pipe is forced down inside as far as it will go, the receiver pressure run up, and the compressed air turned on. This quickly empties the pipe, and driving is resumed. On the Trans-Caucasian railways, compressed air, instead of steam, is now used for atomizing fuel oil. It avoids the formation of explosive gases in the furnace and economizes fuel consumption.

A new high-vacuum air-pump has been invented by W. Gaede. It is of the multiple rotary type, working up to about 8,000 r.p.m., at which speed a nearly complete vacuum is produced.

The granulation of slag by compressed air is superseding the older method by water, and is the subject of a paper recently read by G. Juntzen before the German Metallurgical Association.

The Inspiration Consolidated Copper Co., of Arizona, has ordered six 10-ton, compound, compressed-air locomotives, together with a charging compressor of capacity sufficient for 14 locomotives, which, it is expected, will eventually be installed. The pipe-line pressure is 1,000 lb.; main tank pressure, 800 lb.; initial pressure for the high-pressure cylinder, 250 lb., from which it is expanded to 50 lb. Before entering the low-pressure cylinder, the air is re-heated. It is stated that tests show that this mode of using the air gives a large increase of efficiency over the single-expansion type of locomotive. A series of tests recently made in Germany on compound compressed-air locomotives gave the following results: Air preheated for both cyclinders to 180 deg. C.; length of run, from 0.62 to 1.16 miles; gross loads, 70 to 166 tons; air consumption per ton-mile, 26.3 to 32 cu. ft. for adverse grades of 0.13 per cent. Aside from the question of relative economy of electric and compressed-air underground haulage, the latter has a distinct advantage for mines working ore-bodies of large extent in which there are many secondary gangways and but few long continuous lines.

A Drill Tester.—A few years ago the practice was begun of making efficiency tests on compressed-air rock-drill plants of large mines. The reasonableness and practical value of such tests have appealed more to progressive mine managers, and during 1913 series of tests have been made at several mines; for example, the North Star Mine in California, and the Ojibway Mine in Michigan. Similar work, previously inaugurated, has been continued at the Franklin zinc mine, also at the mines of the Copper Range Consolidated Co., and other properties of the Michigan copper district. A drill-testing machine has lately been patented by W. D. Paynter, of Grass Valley, California, for making shop tests. Indicator cards are taken, air consumption recorded, and the strength of blow measured for different air pressures. Defective drills are thus readily detected and held for repairs, instead of being sent underground and causing loss of time. The effects of changes of air pressure and lubricants can be conveniently investigated. The apparatus is also useful for testing new equipment or for comparing the efficiencies of drills of different makes. It is adapted to both piston and hammer drills.

Portable Compressors.—There has been a notable increase in the use of small, portable, independent air-compressors, driven by an electric motor or gasoline engine. In either case, the entire apparatus, including an air receiver, is mounted on a low truck. An electrically-driven compressor of this type, built by the Sullivan Machinery Co., has a 10 by 10 in. cylinder, and, at 20 r.p.m., compresses 181 cu. ft. of free air to 80 lb. gauge. A circulating pump is provided for cooling the air cylinder. The over-all dimensions, including truck, are about 8 ft. long by 5 ft. wide; total weight, 7,200 lb. The compressor may be driven either by chain or gearing. These little plants are useful for a variety of underground service, where power is required temporarily at a distance from the main mine plant; for example, to operate one or two rock-drills, or a small pump, or a coal pick machine. Other designs of portable compressors are made by the Ingersoll-Rand Co. and the Clayton Works of the International Steam Pump Co. The Ingersoll-Rand Co. also supplies a number of different sizes of small, semi-portable, belt-driven vertical compressors.

Among the new gasoline-driven portable compressors are those of the Ingersoll-Rand Co., National Brake and Electric Co., and the Sullivan Machinery Co. One type, built by the last mentioned concern, is mounted on a heavy wagon truck for surface work, such as the operation of rock drills and contractor's machinery. Its rated capacity is 95 cu. ft. of free air per minute to 90 lb. at 165 r.p.m.; or 112 cu. ft. to 100 lb. at 193 revolutions. The gasoline engine is horizontal, and of 15 to 20 horse-power.

New designs of multiple-port, light disk air-valves are features of some recent compressors. They have a large port area and small lift. Among them may be mentioned those of Roby and Co., Ltd., Lincoln, and Walker Bros., of Wigan, England, the Iversen " Automatic Plate " valve, made by the Mesta Machine Co., and the Rogler-Hoerbiger valve used in the Belliss and Morcom compressors, of England. All of these are spring driven, almost noiseless, and capable of working at high speed.

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* Abstract from the " Mining and Scientific Press."

British Westinghouse Contracts.

To the large number of important contracts recently secured by the British Westinghouse Electric and Manufacturing Company must now be added that which has been given out by the London Port Authority for the construction of a series of rotary converters. We believe it is a fact that the British Westinghouse interests have secured every contract of any magnitude for which they have tendered during recent months, and if they continue to be equally fortunate they will shortly obtain one of the biggest electrification schemes which has been on offer for many years. At present they are engaged in the conversion of more than one railway from steam to electricity, while they are also engaged in other construction works of the highest importance.

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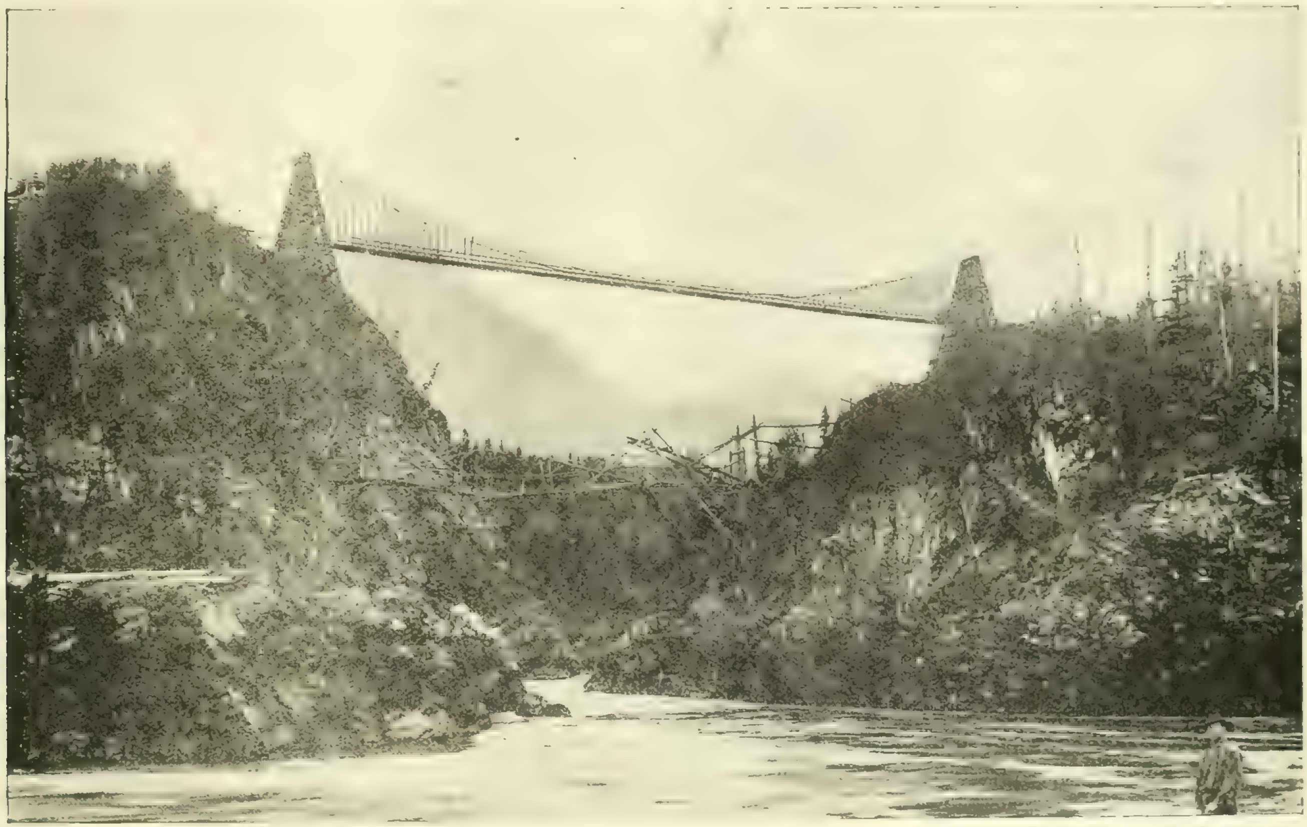
A PICTURESQUE SUSPENSION BRIDGE.

We have received from Messrs. George Cradock & Co., Ltd., the well-known wire rope manufacturers and engineers, of Wakefield, England, some photographs of a very fine suspension bridge recently designed, supplied and erected by them at Hazelton, Western Canada, and spanning the Bulkley River. The bridge is of the Stiffened Suspension type provided with stiffening girders, which minimise undulations of the platforms due to the passage of concentrated loads. These girders also serve the purpose of side railings. The span between the centres of the tower saddles is 451 feet and the bridge platform is 250 feet above the river. The main cables are 2 7-16ths inches in diameter and are of Cradock's Locked Coil Construction. They are made of Cradock's Improved Plough Steel, and each has a tensile strength of over 300 tons. Suspension rods, spaced four feet apart are attached by steel clips to the main cables, the lower ends of the rods being secured to heavy steel cross beams diagonally braced for wind pressure. At each end of the bridge are wood towers having a total height of 68 feet and reaching 47 feet above the platform level. The wood decking or platform consists of longitudinal joists bolted to the steelwork, and covered with 3 inch floor boards. The bridge has been constructed for vehicular and foot passenger traffic, and has been the means whereby a large tract of country, hundreds of square miles in extent, and which hitherto has been practically isolated, has been opened up to regular communication and industry. It may be interesting to mention that the site of the bridge was in the direct route during the great gold rush to Klondyke, the adjacent township of Hazelton being the last of the old Hudson Bay Company's trading posts at which the hurrying goldseekers were able to refit and replenish their stores, before taking up the last stage of the trail. Beneath the suspension bridge will be noticed another structure. This is a bridge constructed by Indian trappers to enable them to exploit the hunting grounds on both sides of the river. It is the third bridge of its kind erected by the Indians, two previously erected having been washed away by the turbulent waters of the Bulkley. As an example of native ingenuity, the bridge is extremely interesting, especially as there was not a single nail employed in building it, wooden pegs being used to fasten the beams and spars together.



Tweefontein By-Product Plant.

Some time ago we mentioned that a large plant was to be erected alongside the Tweefontein Colliery, Transvaal, to utilise the waste coal produced by the pit for the production of power and the recovery of by-products. Some more detailed particulars are now available, and it is difficult to say whether the power supply or by-product recovery side of the business will be the more important of the two. The scheme, which is due to the initiative of Messrs. Harper Bros., aims at the delivery of 15,000 kwts. to the Rand. This will be provided by steam turbo-generator sets taking steam from boilers fired with producer gas. The gas will be generated in Mond producers equipped with an elaborate by-product recovery plant, which will extract the nitrogen from the coal, in the form of sulphate of ammonia, besides benzol and tar. Sulphuric acid and creosote are also suggested as products of the plant. The producers will be capable of gasifying 400,000 tons of coal a year, and from this it is expected that 22,000 tons of sulphate of ammonia and 10,000 tons of tar and tar distillates will be recovered. It has already been demonstrated, by sample shipments, that the coal will yield 119 lbs. of sulphate per ton under ordinary working conditions. A transmission line some fifty miles long is to be erected to connect the power station with the supply system of the Rand, and over this the electric energy will be transmitted at a pressure of 80,000 volts. The plant will, of course, be connected with the railways by the Minaar branch of the main line to Delagoa Bay.

Finance, Commerce, and Industries.

Insurance in the Cape Colony.

A return issued by the Secretary for Finance shows that in Cape Colony the business of non-Colonial companies at the close of the year 1912, stood at 30,263 policies, assuring £11,971,631. This shows an increase on the previous year's figures of 2,642 policies, and the sum assured of £724,662. For Colonial companies, at the end of the year 1912, the number of policies in force was £84,557, and the total sum assured £14,358,767. This shows an increase on the previous year's figures of 11,752 policies, and the sum assured of £1,342,167. Combining the whole business of the companies, non-Colonial and Colonial, for the year 1912, there is a total increase of 14,394 policies, and of £2,066,829 in sums assured. Reviewing the business of some of the individual companies, the following principal increases in the sums assured are noticeable: S.A. Mutual, £869,758; Southern, £313,498; African Life, £245,850; Colonial Mutual, £228,370; Norwich Union, £213,070; Law Union and Rock, £115,690; African Homes Trust, £84,360; United Provident, £70,651; National Mutual, £64,755; Manufacturers (Canada), £60,221; New York Life, £36,648; Commercial Union, £22,246. The following are some of the decreases, those below £10,000 have not been shown: Equitable of the United States, £84,278; Economic, £28,619; Mutual of New York, £21,055; Yorkshire, £15,300; Algemeene Maatschappy, £13,870; Union, £13,009. The progress of life assurance business in the Province may be observed from the following figures, showing the policies in force and the sums assured in the years 1897, 1902, 1907, and 1912:—

	Policies in Force.	Sums Assured.
1897	31,873	£12,233,313
1902	57,940	16,375,640
1907	83,093	21,587,957
1912	114,820	26,330,401

The average sum assured per head of the European population of the Province is estimated at £43, as against £41 for the previous year's returns. This proportion is high in comparison with other countries, but, if the total population of the Cape Province of all races is included, the average sum is a little over £10 5s. per head.

* * * *

The Union Estimates.

The estimates of expenditure, which were issued this week, show that the sum to be defrayed out of the Union Exchequer for the financial year ending March 31st, 1915, is expected to total £16,818,564. The total of the estimates for 1913-14 was £16,419,246. The increase is, therefore, £399,300. The total of the establishments included in the estimates for 1914-15 is £22,740. The total of the establishments included in the estimates for 1913-14 was £21,412. The increase is, therefore, £1,328. This increase is principally due to additions to the establishments of the Departments of Defence, Police Posts and Telegraphs and Agriculture. The estimates for 1914-15 consist of 38 votes as compared with 39 for the preceding year—Votes "Masters of the Supreme Court" and "Superior Courts" having been combined under the latter title. The salaries of Cabinet Ministers are to be reduced by £500 each. The Prime Minister is to receive £3,500 a year instead of £4,000, and the other Ministers £2,500 each instead of £3,000 as at present. The principal variations in the amounts provided in the estimates 1914-15 as compared with the preceding year's figures are as follows:—Increases: Asylums, £18,665; Public Debt, £205,779; Provincial Administrations, £115,250; Defence, £49,260; Magistrates, £14,244; Police, £62,986; Prisons and Reformatories, £39,960; Posts, Telegraphs and Telephones, £93,200; Irrigation Department, £10,813. Decreases—Department of the Interior, £31,178; Buildings, Furniture and Fittings, £163,455; Agricultural Education, £13,338; Lands Department, £16,595. The Miners' Phthisis Board is to get £10,826, instead of £9,245, and the Miners' Phthisis Prevention Committee £1,000, an increase of £500. The expenses of Boards under the Transvaal Industrial Disputes Prevention Act are estimated at £300. Expenses of commissions are set down at £9,000.

The following is a general abstract showing a comparison with the estimated expenditure in the preceding year:—

	Estimates, 1914-15.	Estimates, 193-14.
	£	£
The Governor-General and Parliament.		
H.E. the Governor-General	22,512	22,505
Senate	21,395	21,395
House of Assembly	56,189	56,762
Joint Parliamentary Expenses	10,538	10,503
Prime Minister and Minister of Native Affairs.		
Prime Minister's Department	7,691	8,484
Native Affairs Department	318,531	310,171
Minister of the Interior.		
Department of the Interior	106,519	137,697
Public Health Department	112,661	111,991
Asylums	297,973	279,308
Public Service Commission	8,715	7,129
Printing and Stationery	221,591	218,285
Minister of Finance and Minister of Defence.		
Treasury	40,829	41,376
High Commissioner in London	28,567	29,918
Public Debt	5,014,015	4,808,236
Pensions	454,266	450,744
Provincial Administrations	2,320,558	2,205,308
Miscellaneous Services	93,189	94,322
Inland Revenue Department	29,087	28,949
Audit Department	44,055	49,096
Customs and Excise Department	150,640	148,506
Defence	1,394,300	1,345,031
Minister of Mines and Industries and Minister of Education.		
Department of Mines and Industries	202,350	204,357
Higher Education	124,105	118,963
Minister of Justice.		
Department of Justice	69,562	68,450
Superior Courts	194,713	192,756
Magistrates	441,534	427,290
Police	1,138,293	1,075,307
Prisons and Reformatories	519,540	479,580
Minister of Posts and Telegraphs and Minister of Public Works		
Posts, Telegraphs, and Telephones	1,715,520	1,622,320
Public Works Department	477,953	475,472
Buildings, Furniture and Fittings	192,000	355,455
Minister of Agriculture.		
Agricultural Department	471,785	478,566
Agricultural Education	102,019	115,357
Forestry Department	128,776	124,803
Minister of Lands.		
Lands Department	59,741	76,336
Deeds Offices	28,399	26,628
Surveyors-General	51,984	56,252
Irrigation Department	146,469	135,656
	£16,818,564	£16,419,264

Net Increase ... ... £399,300.

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Reply with full particulars to R. DIESPECKER.
P.O. Ross Hill, Transvaal.

THE WEEK IN THE SHAREMARKET.

Firm and Active—Ending Below Best.

CONSIDERABLE business was put through this week, and the tone remains healthy and hopeful. Towards the end of the week, however, there was a disposition to take profits, and the close will probably be below the best. The decision of the Robinson directors to abandon the fusion scheme is disappointing, and it is felt that the failure is to be attributed to premature judgment on the part of oversea shareholders not conversant with all the facts. The E.R.P.M. annual report, which is said to be very satisfactory, went home by the mail, and the meeting is to be held somewhat earlier this year. City Deep ore reserves, on the annual re-valuation, are said to show an average improvement of about 1 dwt. The Sub Nigel people are discussing alternative schemes of extending the plant. The Geduld is in a similar happy position, and the Modder Deep returns show excellent progress. Rumours regarding a probable splitting of New Modder shares are again current, and the declaration of the Gold Fields dividend is timely. Generally, the news from the mines is most satisfactory, and the native labour prospects are improving daily. Apparently a good steady market is to be expected. In diamonds, Pilandsbergs have been sold down to 16s. by weak holders, and the report is promised for an early date. Crowns have firmed up on the increased scale of operations, and may regain their former popularity. Frank Smiths and Harrisdales have also enjoyed some activity. Tins have not been much of a feature, Zaaiplaats alone displaying strength.

* * * *

	Fri., 30th.	Sat. 31st.	Mon., 2nd.	Tues., 3rd.	Wed., 4th.	Thurs. 5th.
Adair Ushers	0 3*	—	0 3*	0 3*	—	0 3*
African Farms	15 6	15 6*	15 11	15 9	15 8	15 9
Apex Mines	19 0*	19 3*	19 6	18 9*	20 0	19 3*
Aurora Wests		—	9 6*	10 3*	11 3*	—
Bantjes Consolidated	15 6*	16 3*	17 0*	17 0†	—	16 3
Benoni Consolidated	1 10*	2 0*	2 1	2 0†	1 10*	1 10*
Brakpan Mines	54 0*	54 6*	54 6*	55 3*	55 6	56 0
Breyten Collieries	—	29 0*	29 0*	—	29 0*	29 6
British South Africa		20 6*	—	21 9†	—	—
Bushveld Tins	0 8*	0 8*	0 7*	0 8*	0 8*	0 7*
Cassel Coals	12 0*	13 0*	13 0*	13 0*	13 0*	—
Cinderella Cons.	5 6*	6 6		6 3*	6 9†	
City and Suburbans	43 9	44 0	44 0	43 6	43 0	43 0
City Deeps	60 9	63 9	65 0	62 6	61 6	62 0
Cloverfield Mines	5 10	6 2	6 3	6 0	5 9*	5 9*
Clydesdale Collieries	8 0*	8 0	10 0	10 0†	9 0*	9 0
Cons. Gold Fields	—		50 0*	—	—	—
Cons. Investments	21 0	21 0	21 9	21 3*	21 6	21 9
Cons. Langlaagtes	30 6	31 0	31 6	31 3	30 6*	30 6
Cons. Main Reefs	18 6	18 9	18 9	19 0	18 6	18 3
Cons. Mines Selection	—	—	10 0†	9 6*	—	
Coronation Collieries	—	—	15 0*	15 0	15 9	16 0
Coronation Freeholds	0 6	0 6	0 6	—	0 8†	
Coronation Syndicates	4 0*	4 0*	4 6*	4 0*	—	4 0
Crown Diamonds	7 9*	8 3*	9 3	9 3	9 0	8 9
Crown Mines	—	—	123 9*	—	—	—
Durban Rood. Deeps	19 3*	—	19 6*	19 0*	18 0*	—
East Rand Centrals	9 4*	9 6	9 6*	9 6*	9 3*	9 0
East Rand Coals	1 9*	1 10	1 9*	1 9	1 9*	1 9
East Rand Deeps	2 3*	2 3*	2 3	—	2 1	2 0
East Rand Props.	41 0	42 0	41 0*	41 6	41 0*	40 0
East Rand Debentures	—	—	—	—	£85*	£85*
East Rand Mining Estates	—	8 6*	8 0*	8 0	—	
Eastern Gold Mines	1 6*	1 9	1 9*	1 9	1 6*	1 6
Frank Smith Diamonds	6 6	7 6	7 6	7 4	6 11	6 6
French Rands	1 9*	—				1 9*
Geduld Props.	25 0	25 0	26 6	25 6	25 0*	25 0*
Geldenhuis Deeps	—	—	25 0	24 0*	23 6*	23 6*
Glencairn Main Reefs	—		—	—	2 0*	—
Glencoe (Natal) Collieries	6 6*	6 0	6 6	—		6 0
Glynn's Lydenburgs	15 0†	15 0†	12 6	12 0		12 6
Government Areas	20 9	22 0	23 0	22 3	21 6	21 0
Johannesburg Estate	—	—	—	3 0		
Jhb. Board of Executors	—	—	24 0			
Jumpers	3 6	3 6*		3 6*		3 6
Jupiters	6 6	6 3	6 3		6 0	6 0
Kaalfontein Diamonds					0 5	
Klerksdorp Props.	2 4	2 3	2 4	2 3	2 3	2 3
Knight Centrals	9 4	9 9	9 7	9 4*	9 1	9 0
Lace Props.	4 3	4 6	4 3	4 4	4 0	3 11
Lancaster Wests				—	2 0†	
Luipaardsvlei Estate	10 0*	10 0	10 3*	9 9*	—	
Lydenburg Farms	3 1	3 3	3 3	3 3	3 1*	3 0*
Main Reef Wests	11 3	11 0	11 0	10 9	10 3	10 6
Main Reef West Deben-		—	—	—	£65	—
Meyer and Charltons	—	—	—	103 9*	—	—
Middlevlei Estates	1 2	1 2*	—	1 3	1 0	1 3*
Modderfontein B.	83 0	82 6	83 0	82 6*	81 3	81 6*
Modderfontein Deeps	44 0	44 9	44 9	43 0	42 3	42 6
Natal Navigation Colls.	—				15 9	
New Eland Diamonds	—	—	28 0			27 0*
New Era Consolidated	7 3	7 1	7 4	7 3	6 6	7 0
New Geduld Deeps	2 4	2 3	2 3*	2 5†	2 2	2 1
New Kleinfonteins	23 6	24 0	24 0	24 3	24 9	24 9
New Modderfonteins	245 0*	245 0	—	—		
New Rietfonteins	4 0	4 0†	3 0	2 6		—
New Unifieds	10 6	15 3	16 0	15 0		—
Nigels	—	—	18 6†			—
Orange Diamonds	1 9	1 11†	1 8	1 6*	1 8	1 8
Piggs Peak	9 6	9 6*	9 6*	9 6		
Potchefstroom Estate		0 11			0 9*	
Pretoria Cements	45 0	46 0†	46 0†	45 6	45 6	45 6
Princess Estate	6 6*	6 0*	7 0		6 3†	—
Rand Collieries		3 0	4 0		4 0†	—
Rand Klips	3 0	3 1	3 0	3 0	2 10	3 0†
Rand Nucleus	2 3	2 4	2 3	2 1	2 2*	2 0
Randfontein Deeps	4 9	4 0	4 6	4 6	4 0*	4 0
Randfontein Estates	25 9*	26 6	26 3	25 9	25 9*	25 9
Roberts Victors	28 6*	28 6*	28 6*	28 6*	28 6*	28 6*
Robinson Deeps	30 0*	30 6*	30 6*	30 0*		30 3*
Rooiberg Minerals	25 6*	26 6*	26 0*	26 6	26 6	26 3*
Rose Deeps		45 0		45 0*	44 0*	43 0*
Ryan Nigels	3 2*	3 2	3 2	3 2	3 2*	3 2
Shebas	5 3*	5 0*	5 3	5 3*	5 3*	5 3
Simmer Deeps	2 4	—	3 0†	2 0*	—	—
S.A. Diamonds	30 0	—	30 0	30 0*	—	30 0
S.A. Gold Mines	—	—	—	13 0*	—	—
S.A. Lands	3 10	3 11	3 9	3 8	3 7	3 7
Springs Mines	14 6	14 3*	14 6	14 6	14 3	14 0
Steyn Estates					8 9*	—
Sub Nigels	11 9	12 0	12 9	12 3	12 3	12 3
Swaziland Tins	37 6	37 6	38 6	39 3*	42 0*	41 0
Transvaal and Delagoa	41 0*	40 0*	41 0*	40 0*	40 0*	—
Transvaal Coal Trust	36 6	37 0	36 0*	36 6	35 6	35 0
Transvaal Cons. Lands	23 0*	—	24 6*	24 0*	22 6*	
Transvaal G.M. Estates	49 6	49 0*	49 6	49 0*	49 0	49 0
Tudors	1 0*	2 0†	2 0†	2 0†	1 6†	2 0†
Van Dyks	1 4*	1 3	1 6		1 4*	1 3*
Van Ryn Deeps	38 6	40 3	41 0	40 9	40 3*	41 0
Village Deeps	37 6*	37 6*	37 0*	36 0	—	36 0
Village Main Reefs	32 6	32 6*	32 6		—	
Vogelstruis Cons. Deeps	1 6*	1 9*	1 9	1 9	1 6*	
West Rand Cons.		11 3†				
Western Rand Estates	4 0†	3 3	3 0*	4 0†		
Witbank Collieries	44 6	45 0	45 0	47 6*	50 0†	45 0*
Witwatersrands	69 0	69 0	69 0	69 0*	70 0*	72 0
Wit. Deeps	56 0	55 6	56 3	58 0	57 0*	58 0
Wit. Townships	20 0*	20 0*	20 0*		21 0*	20 0
Wolhuters	14 0	14 3	14 3	14 6	14 9	14 6
Zaaiplaats Tins	33 0	33 6	33 6	33 3	33 0	33 0*

*Buyers. †Sellers.

Sakalava Madagascar Proprietary Oil Fields.

The secretary writes:—We have received a cable from our representative in Madagascar advising: "Borehole damaged, not serious, will delay operations about three weeks." The board of directors also beg to intimate they have cabled London for a thoroughly qualified and capable oil field engineer, and two experienced American drillers. The latter to operate the big machine with a capacity of 3,000 feet, when it is installed.

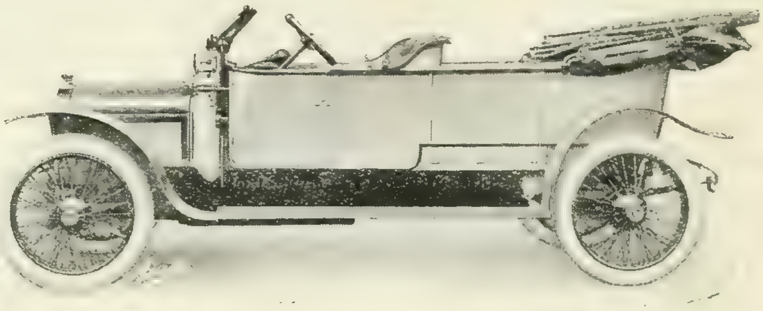
INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

Feb. 27. Southern Freeholds; South Deeps; East Rietfontein Syndicate (annual).
March 13.—Worcester Exploration (annual).
March 16. Robinson; Crown Mines (special).
March 20.—Apex; New Kleinfontein; Benoni Consolidated (special).
March 27.—Simmer Deep; Jupiter (annual); Wolhuter Gold Mines; Buck's Reef (annual).
March 31. Cassel Coal Co. (annual).

"AUSTIN"

12 h.p. "Sirdar" Phaeton to seat four.



CHASSIS. Four cylinders, bore 3 in., stroke 3½in., giving 12·5 brake h.p. at 1,000 revolutions, and developing fully 16 b.h.p. on acceleration to 1,500 r.p.m.; R.A.C. rating 14·3 h.p., four forward speeds and reverse; gate change speed; adjustable valve tappets; wheelbase 9 ft.; rounded radiator; high tension Bosch magneto; Ferodo sectional clutch; Claudel-Hobson carburettor; Austin detachable wheels; 810 x 90 Michelin tyres.

BODY AND EQUIPMENT. Phaeton body with leather upholstery and horse-hair cushions; Cape hood with side curtains; double folding glass screen with brass fittings; spare wheel and tyre; Lucas paraffin side and tail lamps; "Solar" mirror lens acetylene head lamps, with separate generator; speedometer and mileage recorder; horn, tyre pump, lifting jack, kit of tools and accessories.

PRICE. Complete car as above - - - - - - - - - £500 Net.

(A two-seated car can be supplied to order at £460).

DELIVERY. Prompt delivery from

H. GILL & CO.,

45, ELOFF STREET, JOHANNESBURG.

P.O. Box 4659. 'Phone 1505. Wires: "MOTORITIES."

15·9 H.P.Colonial Vulcan.
"Imperial," Three-seater with Two-seat Dickey.

Important Notice.

ONE CAR, as per illlustration, for immediate delivery.
Price £450 complete.
ONE 5-SEATER, arriving incoming mail.
Price £475 complete.
These cars are beautifully finished, and deserve the closest inspection.

Demonstrations and all particulars from the Sole Agents:—
T. B. ADAIR & CO.,
(Vauxhall Agency)
Phone 2570. | 67, Kotze Street, Hillbrow. | Box 1940

Automobile Notes.

A two-seater motor-cycle was recently seen in Birmingham. The seats are of the ordinary motor-cycle variety, and are placed side by side, supported on struts from the back forks.

* * * *

At the present time we (" Motor Cycle ") notice that the price of rubber—that is, taking the price for all grades—is lower than we have ever known it since the introduction of pneumatic tyres in 1887 by Mr. J. B. Dunlop, and we can look forward to a possible further reduction in the price of tyres in the near future.

* * * *

We commend to the consideration of our local road authorities the following resolution recently passed by the Tutbury Rural District Council: "That His Majesty's Government be petitioned to give powers to the District Councils to be able to deal with high fences and hedges, or buildings which are likely to be erected that may obscure the view of cross roads and turnings, which are likely to prove dangerous to motors and other traffic." There are scores of places in our suburbs where the application of a by-law framed in terms of this resolution would have a most beneficial effect.

* * * *

Some demonstrations have recently been given in London to show the efficacy of a new fire-extinguishing preparation. It is in the form of a dry powder which is thrown over the fire, and is supplied in a suitable container in sizes small enough to be carried on a car. It does not deteriorate through storage or exposure to the atmosphere, and is cleanly in use and does not injure any fabric. Tests have shown that it is particularly effective in cases of rapid and fierce fire caused by such inflammables as petrol, paraffin and celluloid.

* * * *

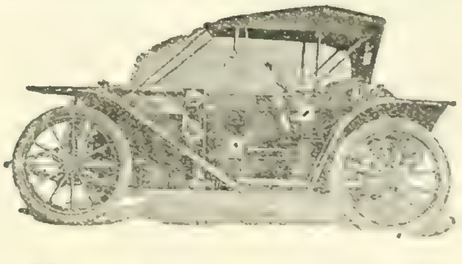
In December last the Johannesburg Municipality issued 27 licences for motor-cycles, bringing the total for 1913 to 2,021, an increase of almost 600 on the year 1912, when the number was 1,446. The increase during 1912 was exactly 600 over 1911, the figures being—1911, 846, and 1912, 1,446. So that for the past two years the use of the motor-cycle in Johannesburg has increased by 600 annually, an enormous ratio, when the number of the white population is taken into consideration. Ordinary bicycles have shown a consistent falling off in number during the same period, notwithstanding the fact that the use of the bicycle is growing strongly among the native population.

* * * *

The signs in England point to another rise in the price of petrol at no distant date. Wholesale contracts for 1914 have been made at prices which show, in some cases, an increase of as much as threepence per gallon. This means that consumers may have to pay two shillings per gallon early in the current year.

This should once more stimulate the efforts of those who are searching for and experimenting with alternative fuels. For the moment benzol is the only fuel to which the motorist can look for relief, but the production is limited, and there seems no reason, for the present at any rate, to expect that the supply will overtake the demand. There are great possibilities in alcohol—some eminent engineers consider them certainties—if the Excise restrictions can be withdrawn. It is true that tests made in Germany and America with alcohol in the internal combustion engine have not been very encouraging, but then the engines with which the experiments were conducted were not designed for its consumption. Given the removal of restrictions in the production of alcohol, there can be little doubt that engineers and designers will speedily produce an engine that will run satisfactorily on this fuel.

It is significant in this connection that the Imperial Motor Transport Council has formed an Alcohol Motor Fuel Committee, under the presidency of Mr. Arthur Stanley, for the purpose of investigating the possibilities of alcohol in so far as relates to its use in the internal combustion engine. The great argument in favour of alcohol as a fuel is that it can be home-produced without depleting the sources of supply, which are contained within the confines of the Empire. The composition of the committee, which includes, in addition to the chairman of the R.A.C., such well-known names as Sir Beverton Redwood, adviser on petroleum to the Admiralty, Dr. Ormandy, an admitted authority on alcohol as a motor fuel, and Mr. J. S. Critchley, is a sure guarantee that the investigation will be thorough and complete.



The K-R-I-T Car.
4 Cylinder, 25/30 h.p., BOSCH MAGNETO, ZENITH CARBURETTOR, 3 Speeds and reverse. Gate Change. Full Equipment, hood, screen, 5 Lamps, 5 detachable rims. 5 SEATER, £270. 2 SEATER TORPEDO, £265
Sole Agents: REED BROS., Government Sq., Johannesburg.
Tel. Add.: "REEDWORK." P.O. Box 2720.
'Phone 1434.

QUARTERLY REPORTS.

Springs Mines.

During the quarter ended 31st December the following development work was accomplished on the Springs Mines: Total footage, 3,012; footage on reef, 435; footage sampled, 1,375; reef width, 32·51 inches; assay value, 7·59 dwts. Owing to the development so far accomplished being mainly in the nature of station roadways and haulages below the reef, only a portion of the footage has been sampled, and that mostly by means of diamond drilling. The south shaft has been sunk an additional 21 feet to its final depth of 3,826 feet, of which 3,824 feet are timbered. The Rand Water Board took 96,249,000 gallons of water during the quarter. Work was interrupted for several days in consequence of the recent general strike, but has now been resumed, and is proceeding normally.

Ginsberg.

The operations at the Ginsberg for the quarter ended December 31 were as follows:—Number of feet driven, sunk and risen, exclusive of stopes, 540; ore developed (milling basis), 21,469 tons; ore mined, 64,240 tons; less waste sorted out (29·86 per cent.), 19,183 tons; total, 45,057 tons; ore crushed, 41,962 tons; duty per stamp per day, 6,703 tons; total yield (exclusive of accumulated slimes), 13,567.734 ozs. ;; yield in fine gold per ton milled, 6.035 dwts. Accumulated slime treatment: Tons treated, 1,982; yield in fine gold, 194,897 ozs.; yield per ton treated, fine gold, 1·967 dwts; working revenue, £57,632 (25·636s. per ton); working profit, £42,468 (18·891s. per ton); working profit, £15,163 (6·745s. per ton); net profit, £15,827. The quantity of ore crushed was increased by 2,537 tons, and the working costs were reduced by about 1s. 6d. per ton as compared with the previous quarter. Unfortunately the grade of the ore sent to the mill showed a falling off to the extent of 2·459s. per ton, so that the working profit was reduced by £1,205. As, however, treatment of accumulated slime was carried on throughout the quarter, there was an increased revenue from this source, and the total gross profit was only £504 below that realised during the previous three months. The development of the north section continues to open up ore of average grade. There has been an improvement in the value of the reef exposed in the ninth level.

City and Suburban.

The report of the directors of the City and Suburban G.M. Company for the quarter ended December 31 shows that the profit for the quarter was £60,968 4s. 7d. The number of feet driven, sunk and risen, exclusive of stopes, was 3,154, and the tonnage stoped, including ore obtained from developing faces, 83,201 tons. The working profit for the year was as follows: 1st quarter, £65,874 17s. 10d., equal to 16s. 6.867d. per ton milled; 2nd quarter, £65,870 9s. 2d., equal to 16s. 4·775d. per ton milled; 3rd quarter, £54,806 0s. 7d., equal to 15s. 6·380d. per ton milled; special clean-up, £20,961 6s. 11d., equal to 5s. 11·284d. per ton milled; 4th quarter, £60,968 4s. 7d., equal to 15s. 11·700d. per ton milled. The capital expenditure for the quarter ended December 31 amounted to £542 14s. 11d. In connection with the late strike, the report stated that the men in the company's shops struck at 7 a.m. on January 14, and the underground men at 3.30 p.m. on the same day. The natives behaved well and went down the mine on the 16th and 17th, working under the supervision of officials. The battery stopped at 1 p.m. on the 14th, and restarted at 4 p.m. on the 16th.

West Rand Consolidated.

The revenue of the West Rand Consolidated for the quarter ended 31st December was £81,457 18s. 4d., or £1 6s. 0·54d. per ton, from 62,550 tons crushed; cost, £68,170 9s. 3d., or £1 1s. 9·56d. per ton; profit, £13,287 9s. 1d., or 4s. 2·98d. per ton; capital expenditure, £16,371 15s. 7d.; number of feet driven, sunk and risen (including shafts), 4,592; footage sampled on reef, 1,600; average stoping width, 46 inches; average assay value over stoping width: payable (875 feet sampled), 6·2 dwts.; low grade (725 feet sampled), 2·8 dwts. The working profit shows a decrease of £9,821 19s. 11d. as compared with the previous quarter, in consequence of the intensified shortage of native labour at the mine. The tonnage milled is 14,650 less than for the quarter ended 30th September, which, in turn, was considerably below the previous existing standard. The natives at present employed underground represent only about 40 per cent. of the mine's requirements, as against a full underground complement during the first half of the year. The explanation for this abnormal decrease is that the general strike in July last resulted in a very large number of time-expired and short-contract natives leaving the property, which necessitated the transfer of a considerable number of hammer boys to machines and other less highly-paid classes of work, especially tramming, in order to keep the mill running. In this connection it may be explained that machine stoping requires less boys as compared with hand stoping, and therefore releases a number of natives who can be employed on tramming, lashing and other underground work; notwithstanding these transfers, however, there was still a considerable shortage in these last-mentioned (and less remunerative) departments of native labour, and only as this shortage is made good will it be possible to engage new hammer boys who offer for work. It is anticipated that so soon as the native labour force is sufficiently augmented to render it possible to revert to hand stoping, the mine will again attract the additional number of boys required to restore milling operations to the normal level. The average development values, as shown on the previous page, represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserves.

Dredging in Portuguese East Africa.*

Gold dredging has not played an important part in the exploration of Africa, but mining men throughout South Africa are taking a keen interest in the work of the Andrada Mines Company, a company that is now erecting a 7½ cu. ft. gold dredge in the Revue Valley, about four miles from Macequece, which is the centre of the mining district of Portuguese East Africa. This dredge, which is being built by the Bucyrus Company, has a steel hull. The machinery will be electrically driven and equipped to dig to a depth of 25 ft. below water level. The boat can be operated either by head-line or on spuds. The equipment is of the latest design used in Calefornia. The same company is responsible for the only other active mining work in Portuguese East Africa, namely, those at the Bragança mine, at Chimezi. Their electrical plant, though small, furnishes power for their present operations, but a new plant to generate 1,000 h.p. is being built on the Inhyamucarara river, a point about 18 miles distant from the dredge, where they have a good supply of water and a head of 950 feet. The only previous attempt to dredge in this part of Africa was made in 1903 by the Mazoe Dredging Company, with two small machines with buckets of 2½ cu. ft. capacity, built in Melbourne. Before the dredges arrived on the property, it was discovered that the ground for which they were built contained no gold, so a new place had to be found, and they were put on the Muza river, about 16 miles from Macequece. These boats only operated for a period of two weeks. They were not designed for the particular local conditions, and could not dig material containing large boulders. They were eventually sold for less than £100, to satisfy a debt. It is also interesting to note that this Muza river property was carefully prospected for dredging purposes this year, and found to be of no value. No large alluvial deposit of economic value has been found here, though considerable prospecting has been done during the past three years, and it is doubtful if further work will be carried on along these lines until the success of the Andrada dredge is assured. Native labour here is of the same class as in many other parts of Africa, but such white labour as is obtained is inferior, and any company operating in these parts would find it advisable to send their entire crew of skilled operators from abroad. The wages paid for common white labour is 18s. per diem, and 22s. to 25s. for skilled labour. The latter is difficult to get, as good mechanics stay in the better parts of Rhodesia and on the Rand.

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*By G. T. Nicholson in the *Mozambique Gazette.*

Tell advertisers you saw it in the *South African Mining Journal.*

Worcester Exploration and Gold Mining Company, Limited.

(Registered in the Cape Province and Incorporated in Transvaal, Union of South Africa.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN in terms of Section 32 of the Trust Deed, that the Ordinary General Meeting of Shareholders will be held in the Town Hall, Worcester, C.P., **on Friday, 13th March next, at 10 a.m.,** for the purpose of receiving Directors' Report, Balance Sheet and Profit and Loss Account to 31st December last; for the election of two Directors in place of Messrs. J. W. Bosman and H. C. Meiring, who retire, but are eligible for re-election; for election of two Auditors and for General Business.

Nominations must be sent in in writing to the Secretary on or before the 27th February next.

The Share Register will be closed from the 5th to the 13th March inclusive.

By Order,
M. S. FALCK, Secretary.

New Companies.

4341 Cassim Adam, Ltd., 155, Prinsloo Street, Pretoria; capital, £2,000.
4342 Bokkraal Development Co., Ltd., 19 20, Norwich Union Buildings, Fox Street, Johannesburg; capital, £1,800.
4343 The Naboom Tins, Ltd., 5, Colonial Mutual Buildings, Fox Street, Johannesburg; capital, £12,500.
4344 Lachpur Trading Co., Ltd., Stand No. 569, corner Park Road and Lover's Walk, Fordsburg, Johannesburg; capital, £500.
4345 The National Investment and Trust Co., Ltd., 12, Hatfield House, corner Eloff and President Streets, Johannesburg; capital, £5,000.
4346 Buchanan Gold Mining Syndicate, Ltd., Buchanan Gold Mine, on Farm Waterval No. 48, near Sabie; capital, £1,800.
4347 The Sundays River Settlements, Ltd., Exploration Buildings, Commissioner Street, Johannesburg; capital, £50,000.
4348 T. R. Lewis, Ltd., 116. Market Street, Pretoria; capital, £2,000.
4349 Istvania Gold Mining Co., Ltd., 12, Albert Street, Johannesburg; capital, £12,000.
4350 Witfontein Estates, Ltd., 8, Grosvenor Chambers, Loveday Street, Johannesburg; capital, £300.
4351 The Pretoria Detinning Co., Ltd., St. Andries Chambers, 222, St. Andries Street, Pretoria; capital, £500.
4352 Brakpan Real Estates Syndicate, Ltd., Lot No. 1030, Market Square, Brakpan; capital, £1,700.
4353 Albert Phillips and Co., Ltd., 23, Beckett's Buildings, President Street, Johannesburg; capital, £1,000.
4355 Reunert and Lenz, Ltd., Consolidated Building, corner Harrison and Fox Streets, Johannesburg; capital, £100,000.
4356 The Delta "D" Co., Ltd., 5, Breda Chambers, corner Rissik and Fox Streets, Johannesburg; capital, £2,500.
4357 Star of Rhodesia, Ltd., 148, Exploration Buildings, Commissioner Street, Johannesburg; capital, £2,500.
4358 The African Plumbing and Metal Works, Ltd., corner Main and Kruis Streets, Johannesburg; capital, £10,000.
4359 Fine and Fine, Ltd., 63, Juta Street, Braamfontein, Johannesburg; capital, £2,000.
4360 The Premier Mine Dairy Farmers' Association, Ltd., Premier Mine, Transvaal; capital, £100.
4361 J. Whitford-Griffiths and Co., Ltd., 54, Sauer's Buildings, Loveday Street, Johannesburg; capital, £1,500.
4362 Friedmann and Foy, Ltd., Pinns Buildings, corner Market and Kruis Streets, Johannesburg; capital, £12,500.
4363 The Standard Fresh Milk Supply Co., Ltd., 188, Market Street, Johannesburg; capital, £4,000.
4364 The Wolhuter Crushed Stone Suppliers, Ltd., Bain's Buildings, Commissioner Street, Johannesburg; capital, £2,000.
4365 African Cinemas, Ltd., Royal Arcade, Stand No. 1569, Pritchard Street, Johannesburg; capital, £1,100.
4366 Critic, Ltd., Mercantile Buildings, corner Commissioner and Simmonds Streets, Johannesburg; capital, £500.

Foreign Companies Registered.

4354 Ellams, Ltd., c/o Herbert Frith Bailey, 33, Rissik Street, Johannesburg, and Harry Edgar Knowles, 33, Rissik Street, Johannesburg; capital, £1,000.

Extraordinary and Special Resolutions.

4096 Robert Gregg, Ltd., Pretoria; amendment of articles.
3692 Alonzo Medicine Co., Ltd., Johannesburg; amendment of articles.
3816 The Pretoria Tin Co., Ltd., Pretoria; reduction of capital.
4115 Head and Co., Ltd., Johannesburg; increase of capital.
4115 Head and Co., Ltd., Johannesburg; payment of commission.
2946 The Rooiberg Minerals Development Co., Ltd., Johannesburg; adoption of new articles.

Notices of the Situation of Registered Office

3724 L. C. Smith and Brothers Typewriter, Ltd., 5 and 5a, Winchester House, corner Loveday and Main Streets, Johannesburg.
3928 Auto-Grip, Ltd., Stand No. 1755, corner Joubert and President Streets, Johannesburg.
2586 Tube Mill Linings, Ltd., Room 305, third floor, The Corner House, Johannesburg.
3889 Criterion Theatres (S.A.), Ltd., 52, Winchester House, Loveday Street, Johannesburg.
4295 Yates and Co., Ltd., 212, Church Street, Pretoria.
3487 The Farmers' Fresh Meat Supply Co., Ltd., 6a, Anderson Street, Turffontein, Johannesburg.
3108 The Jagersfontein Central, Ltd., 171, Stock Exchange Buildings, Johannesburg.
3571 Macaulay, Ltd., 171, Stock Exchange Buildings, Johannesburg.
4047 Wybert Frederick, Ltd., 171, Stock Exchange Buildings, Johannesburg.

Increases of Capital.

4178 Stella, Ltd., Johannesburg; £1,400 to £1,790.
4220 Pilandsberg Diamonds and Minerals, Ltd., Johannesburg; £25,000 to £30,000.
4115 Head and Co., Ltd., Johannesburg; £2,500 to £5,000.

Voluntary Liquidations.

3556 Premier Brick and Tile Co., Ltd., Johannesburg.
4161 Victor Frolich, Ltd., Potchefstroom.
4097 The Chemicon Manufacturing Co., Ltd., Johannesburg.

Modder Deep Levels.

The secretary writes: I am directed to hand you herewith for publication the following particulars of tonnage developed in my company's mine as at 31st December last, viz.:—982,000 tons developed, inclusive of 134,000 tons contained in shaft pillars, of an average assay value of 7 dwts. over an assumed stoping width of 75 inches. 191,000 tons partially developed of an average assay value of 10·5 dwts. over an assumed stoping width of 62 inches. Total developed and partially developed ore, 1,173,000 tons, of an average assay value of 7·5 dwts. over an assumed stoping width of 73 inches. In addition to the above there are 300,000 tons of probable payable ore, indicated by development work so far done, to which no value can be as yet assigned.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8.15
Standard—Louis Meyer's Company	See bills.
Empire—Varieties	8.15
Palladium	8.15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

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The Week's Company Meetings.

FERREIRA DEEP.

Annual Meeting.

Ore Reserve Position.

Prospects of the Mine.

Profits and Working Costs.

The inadequacy of the supply of native labour was emphasised at the twelfth ordinary meeting of shareholders of the Ferreira Deep, Ltd., held last week in the board-room, Corner House. Mr. H. C. Boyd presided and others present were Messrs. H. A. Rogers, J. Munro, R. Martin, H. J. McCormick, F. H. Barry, M. Honnet, S. C. Steil and E. A. Wallers, representing 599,241 shares out of an issue of 980,000.

Chairman's Speech.

The Chairman, in moving the adoption of the directors' report and the accounts, said: The results of the operations during the twelve months ended the 30th of September, 1913, recorded in the report and accounts now submitted for your approval, are the most satisfactory in the history of the company. A net profit of £703,384 12s. 7d. was earned out of which two dividends of 25 per cent. each, amounting in all to £499,000, were paid. The profits tax absorbed £63,121 6s., and capital expenditure and liquidation expenses of the Ferreira Gold Mining Company amounted to £5,481 2s. 2d. and £1,635 9s. 6d., respectively. An undistributed balance of £268,267 5s., including the amount brought forward from the previous accounts, was carried forward. At the beginning of this month there remained to be expended on capital account an amount of £5,790, mainly in connection with the improvement in the pumping arrangements referred to in the manager's report. No further capital expenditure is at present contemplated.

Profits Affected.

Satisfactory as the above profits were, they could undoubtedly have been improved on had the supply of native labour been sufficient. Throughout the year the force was inadequate, and there was, as you see from the reports, a marked decrease towards the close of the period seriously affecting the profits. During the current financial year we have continued to suffer severely in this respect—even this month there is further decrease—but there are now signs of some improvement in the supply to the mines generally, and we may hope shortly to participate in this improvement.

The technical reports deal fully with the mining operations of the year. The large increase in the tonnage milled to 647,550 tons was due to the greatly improved condition of the deep shafts, in which, owing to the steadying of the ground by means of sand-filling, hoisting operations are no longer frequently interrupted as formerly. It is recorded that in all 771,604 tons of sand have been lowered into the mine since this work started. These shafts are still a source of considerable expenditure for maintenance, but are no longer a cause of constant anxiety as they were before.

Reef Packing.

The system of reef packing in the current workings has been continued, and is proving very effective. In all, 146,288 tons of reef had been so packed at the close of the year, while 17,619 tons had been withdrawn and sent to the mill. This packing has naturally added a considerable burden to working costs, but the expense is fully justified by the results, and all these packs will eventually be removed and milled. While the mine cannot be said to be free from underground movements due to the heavy pressure, it is now in a position to resist them in such a manner as to reduce greatly the risks of disorganisation such as we suffered from in the past. Only one outcrop shaft is now being used; this shaft was extended into the deep workings during the year and facilitated the mining of the old boundary pillars and block ground in the upper levels of the deep section, while the rich shaft pillars at the bottom of No. 2 incline, now closed, were also mined out. The extraction of this ore to a great extent accounts for the improved yield per ton milled, which, as you will have seen, increased by 1s. 7d. per ton.

Ore Reserves.

As was expected, the footage of ordinary development somewhat decreased, and it is pointed out that, owing to the shape of the property, further decrease in this respect may be looked for in future; the western will, before long, be fully developed. The ore reserves position remains satisfactory, there being at the close of the financial year 1,974,400 tons, of an average value of 8.7dwts. per ton. The 128,669 tons in reef packs in the mine have at least a similar value, and may be regarded as additional reserves. There is a decrease in the average value of the reserves, compared with the previous estimate of .7dwts. per ton. This is due to the gradual depletion of the western, or richer, section of the mine, and the increase of development in the eastern section, which, so far, has, generally speaking, disclosed lower values. You will recollect that the ground east of the east shaft has till now disclosed very little payable main reef leader. Development has lately been resumed in this section, and during last month and this consistent payable values have been disclosed on the lowest level, the thirteenth. Work has, in consequence, been restarted on the twelfth level, and further exploratory work will probably be undertaken on the other levels. Though it is too early to assume that the previous results will be reversed, these disclosures are distinctly encouraging. The cross-cut toward the claims lying to the south-east of the Grahamstown dyke has, at date, advanced 370 feet, leaving further 470 feet to be driven. The Village Deep is still unable, for want of labour, to do the proposed development mentoned by the consulting engineer.

Working Costs.

While the consulting engineer's report draws attention to the possibility of a decrease in value in the ground remaining to be opened up, there is reason to hope that any immediate possible decrease will now be offset by a reduction in working costs. The condition of the mine is so greatly improved that it is reasonable to look for such reduction, provided the labour supply is satisfactory. As you have seen, working costs were somewhat reduced last year, and during the past quarter there has been further improvement in this respect, costs being 17s. 2d. per ton last month and having averaged 17s. 10d. per ton for the three months, against an average of over 20s. last year. It is to be remembered, however, that the development redemption charge has been reduced by 6d. per ton. The prospects for the current year, granted a reasonable supply of native labour, are, therefore, satisfactory; under such conditions we may expect more than to maintain the present rate of crushing. Towards the end of this year, however, the ore from the outcrop section will probably be exhausted, and to enable us to crush monthly an amount approaching that at present being milled a greatly increased quantity of ore will have to be transported on surface to the outcrop mill, or other arrangements will have to be made at the Deep battery. The transference of the three tube mills to that battery from the outcrop plant would probably supply the necessary additional crushing capacity: the additional tanks, etc., could also be transferred, so no great expense should be involved. The Deep mine should be capable of supplying 45,000 tons per month, and that is probably the most that we can expect to mill.

Effect of Strikes.

You have already been fully advised of the strike of employes which took place on our mine, in common with others, last July and of the effect on our operations. As regards the recent labour disturbances, on the 14th inst., owing to the declaration of a general strike, the majority of the underground and surface workmen ceased work. By the morning of the 16th a number of men presented themselves for work, and mining operations were in part resumed. On the 17th the full native shift was employed, and by Monday, the 19th, work was practically normal, all the skilled men required having been engaged. The reduction employes remained at their posts throughout. Owing to the effective steps taken by the Government, there was an entire absence of violence or active intimidation on the property. The staff, as always, were entirely loyal, and rendered the manager the greatest assistance in policing the property and keeping control of the natives, and our cordial thanks are due to them for their efforts. As a result of this strike, and the further decrease in native labour, the tonnage milled this month will probably be reduced by some 5,000 tons. Before concluding, I desire, on behalf of the board, to record our appreciation of the valuable services which have continued to be rendered by the manager, Mr. Trump, by Mr. Cazalet, our consulting engineer, and by Mr. Carter, who has recently acted for Mr. Cazalet while that gentleman was on leave. I now beg to move the adoption of the report and accounts for the year ended the 30th September, 1913.

The report and accounts were unanimously adopted.

Messrs. H. C. Boyd and R. W. Schumacher, retiring directors, were re-elected.

Messrs. C. L. Andersson and Co. and Samuel Thompson, auditors, were reappointed.

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Notes and News.

The City Deep's New Shaft.

At the end of January the new circular shaft of the City Deep, Ltd., had reached a depth of 677 feet. This shaft, like that being sunk in the western section of the Crown Mines property, is being put down for purposes of ventilation and is 18 feet in diameter. A start was made in sinking operations in the last quarter, but work was for some time hampered by the erection of the headgear and engines, etc. This was completed some time ago and the rate of sinking in the future will be much more rapid. The depth at which reef will be cut is estimated at 2,300 feet.

* * * *

Phthisis and Open Air.

In accordance with the promise of the Minister of Mines, the Government is co-operating with the Phthisis Board on the pound for pound principle for the building at Kaapsche Hoop of a number of wood and iron cottages for phthisical miners. It is hoped to find the men work on the alluvial diggings in the neighbourhood, in the expectation that the open air life will benefit them.

* * * *

Machavie Position.

Little has lately been heard of the position of the Machavie, and doubtless shareholders will be fully informed of the milling results at the approaching annual meeting. It is understood that the suction gas plant at first caused some trouble, though hardly more than might have been expected from a steam plant, had it been installed, owing to the scarcity of water. Otherwise the new reduction works with its several novel features is said to be running smoothly and giving a satisfactory extraction.

* * * *

Olifant's River Tin.

A large amount of development work is proceeding quietly on the Olifant's River tin fields and at the different properties there is now developed in the mine or lying at surface tin ore worth a very substantial sum. On the properties of the Olifant's River Tin Syndicate there is lying at surface tin ore of an estimated value of over £20,000. Development disclosures are said to be somewhat erratic, but extensive stretches of good ground have been opened up and there is undoubtedly a large amount of ore in this locality which will yield good profits when milling commences.

* * * *

An American Deportation.

Apparently Johannesburg is not the only mining town from which undesirable "industrialists" are deported. In view of recent events in this country the following note which we abstract from an American contemporary, is of peculiar interest: "As an undesirable citizen, Charles H. Moyer, president of the Western Federation of Miners, has been forcibly deported from Calumet by the 'Citizens Alliance.' This action on the part of the 'Alliance' should meet with the approval of both strikers and operators as little good could be expected from the efforts of one so ill-reputed in the district as the present president of the Western Federation of Miners."

* * * *

Robinson—Crown Mines.

We are sorry that the Robinson and Crown Mines directors took umbrage at the ill-informed campaign of criticism on the other side regarding their fusion scheme. Had they gone on with it, we have not the slightest doubt shareholders in both companies would have become convinced, on further study, of the merits of the scheme, and the directors' proposals would have been overwhelmingly endorsed. As it is, the Crown Mines can, of course, get on very well without the Robinson, though we should imagine the latter will be a little puzzled how best to deal with its accumulated surplus funds. Amateur financiers will doubtless rush in with divers proposals how most profitably to dispose of them. The horrible example of the Jumpers and Benoni may, however, deter the directors from taking risks with East Rand areas, and the equally unfortunate adventure of the Jubilee and Salisbury in Rhodesia will likewise dissuade them from incursions into that fickle territory. True they can easily fall back on the safe, inglorious method of distributing the cash assets in dividends, but when all is said it still seems to us that they have now turned down the best plan of all.

* * * *

The Truth About Congo Mining.

Exaggerated accounts of the richness of the Kilo gold fields that have appeared in the Rand papers are qualified in an official report issued by the Belgian Colonial Office. According to this publication, diamond pipes are stated to have been discovered in the Makonobe territory and gold in the area between Tanga, Lohali, and Néfoko. The gold mines of Kilo, in the Stanleyville districts, increased their output in 1912 to 740 kgs., against 636 kgs. in 1911. The bullion has a commercial value of about f. 3,000 per kg., and the cost of production is f. 1,800, leaving a net profit of f. 1,200. Two thousand labourers are employed on the property.

* * * *

The E.R.P.M.'s Year.

The East Rand Proprietary Mines, Ltd., has not yet published its annual report in Johannesburg, but a Sunday contemporary in its last issue gave what purported to be a synopsis of the annual statements of the directors and technical managers. From this it would appear that the company has on the whole had a satisfactory year and that despite the dislocation of the industry through the strike the debenture debt has been substantially reduced. Ore reserves are said to be materially less than at the end of 1912, but a pleasing feature is that an amount of £228,000 stands to the credit of development suspense account and is earmarked specifically for that purpose.

* * * *

Randfontein Debentures.

The debenture register of the Randfontein Estates 6 per cent. first mortgage debentures will be closed from the 22nd of February to the 28th of February, 1914, both days inclusive, and warrants in payment of the half-year's interest, due on the 1st March, 1914, will be posted to registered debenture holders on the 28th instant.

* * * *

Novel Municipal Finance.

When our methods of municipal finance are trumpeted forth in the daily papers as "novel," it is time for the plain man to begin to take notice. To the Chairman of the Johannesburg Finance Committee is due this doubtful honour of pioneering in a direction which fortunately has hitherto been unknown to South African public finance. Briefly, it would appear that Mr. Graumann's much "boosted" innovation consists of escaping an appeal to the public for a necessary loan of half a million by adopting the simple expedient of borrowing the amount from the Loan Redemption Fund. In other words, the town is withdrawing from the statutory fund set apart to meet its loan obligations a round sum of half a million for fresh capital expenditure. Apparently this startling procedure is legal under the borrowing powers granted to the Municipality; and it is justified by Mr. Graumann on the ground that under existing conditions the Rand could only raise the loan in the open market at a discount of 10 per cent. We cannot help thinking that this is a risky, unnecessary, high-handed proceeding which, to our lasting detriment, may be regarded by holders of our Municipal Stock as sharp practice. Though the letter of the law may not be broken, there can be no doubt that its spirit is violated. Other British Municipalities have to pay higher rates of interest on their loans than Johannesburg, for the reason that they are not—as Johannesburg was hitherto understood by investors to be—legally obliged to contribute to a Sinking or Redemption Fund. Legally, as we have said, Mr. Graumann's finance may be all right; but morally it is doubtful; and surely if our borrowing powers are at such a low ebb that the necessary money cannot be got in the open market at more favourable terms than those mentioned by Mr. Graumann, his present expedient is not calculated to enhance our present credit or improve our future market prospects? Indeed, the moment could hardly have been less propitious for financial experiments and makeshifts of this sort. In other directions our Town Council has lately shown itself possessed of unexpectedly strong moral fibre. It seems a pity that some of that praiseworthy spirit did not communicate itself to the Municipal department of finance.

* * * *

Pilandsberg Diamonds.

Mr. H. S. Harger's report on the farm Saltpetre Pan, in the Herbert district, although it describes that property as being exceedingly promising, does not present such a glowing picture as many shareholders imagined a few weeks ago. Saltpetre Pan, as most people know, is possessed by the Pilandsberg Diamonds, Ltd., a concern which has loomed big in the speculative vision of late. At a meeting of shareholders in this concern, held on Monday, Mr. Harger's report was submitted. "The feature of greatest importance on the farm Saltpetre Pan," writes Mr. Harger, "is the big diamondiferous fissure previously referred to." Mr. Harger goes on to describe this fissure and then writes that apart from this three discoveries have just been made which entirely alter and much improve the prospective value of this farm. In concluding his report he says:—

> "It has lately been demonstrated that you have nearly five miles of unprospected country along lines of Kimberlite fissuring, which may carry a true pipe anywhere. I think I have never examined a property which presented bigger chances for the prospector, and it will be uncommonly bad luck if these miles of fracture do not possess a mine of useful size. The country must be looked on as exceedingly promising in view of the fact that none of the fissures are known to be barren, while a distinct indication of richness is seen wherever serious work has been done. On this account I can only recommend that a big test be made of ground from the mine immediately the tube mill is ready for work, and that a substantial sum of money be devoted to thoroughly prospecting the other fissures now known to exist in search of a pipe. Up to the present very little work has been done, the efforts of the management apparently having been confined to stripping and opening up a portion of the central area, the erection of washing and hauling gear, etc."

* * * *

Mr. Craig's Pessimistic Oil Report.

The report of Mr. Cunningham Craig, the expert employed by Government to report on petroleum prospects in South Africa, has now been issued. It states that though necessary to give a very pessimistic view of attempts to strike crude petroleum, it has been the methods that must be chiefly condemned. No real scientific prospecting for petroleum has yet been accomplished, and considerable capital has been sunk in propositions which never from the first had the remotest prospect of success. Mr. Craig comes to the conclusion that it is to the Karroo we must look if an oil field is to be found, and though he does not think the prospects very hopeful, still it might be as well to make investigations in the folded belt of the Karroo system. The area south of Aberdeen, near Jansenville and Klipplaat stations, should be examined. Boring with a diamond drill is too slow and expensive. A continued rotary and percussive drill should be used. The production of oil would pay in South Africa, and even if oil was not struck natural gas may be discovered which would prove a valuable commercial asset. Both in regard to the oil and shale industry, he thinks the prospects are hopeful, and recommends Kikboschfontein, Mooifontein, Waaihoek, and Hlatimbe Umkumaas areas should be considered in this connection, and that Government should assist in making a thorough test. He concluded:—In concluding this report, while I regret that it has been necessary to give a gloomy view of many propositions where hard and careful prospecting work has been performed, I am hopeful that my tour may not be without some results in turning the attention of prospectors and capitalists to areas more worthy of exploitation. I am of opinion that the prospecting of the folded belt of the Karroo system for crude petroleum and natural gas is of less importance than the development of shale mining and refining, and may therefore be relegated to a secondary place. All the evidence to hand at present leads to the belief that an oil shale industry has good prospects of proving successful, and I would urge that no effort be spared to ensure that a fair test of its possibilities be made.

Sir Almroth Wright's Report.

Sir Almroth Wright's long-expected report on pneumonia among Rand natives was issued recently in London. Speaking of the pneumonia scourge on the Rand, Sir Almroth Wright says the blood of the African native differs from that of the European in being incapable of developing a so-called bactericidal power towards pneumonia germs, and is inferior to it in respect of its "immunising response," or ability to produce antidotes which shall prevent the hostile germs from becoming established in the body. Careful investigation showed that pneumonia is unknown in the native kraals. When they are massed together in compounds, in neighbourhoods where infection is rife, a high mortality becomes almost inevitable. The actual life in the mines, Sir Almroth points out, seems to play no part in the aetiology of the disease, which is seen at its very worst among the newly-arrived natives who have not yet begun their work. Nor can the mischief be ascribed to climatic conditions. Pneumonia caused a very heavy mortality among the African natives working upon the Panama Canal; it kills large numbers of negro labourers and soldiers in such diversified localities as Rhodesia, the French African Colonies, and the Egyptian Soudan. Preventive inoculation has been definitely proved to be of great value. In the Premier Diamond mine only five per cent. of the inoculated natives contracted pneumonia, as against 10 per cent. of the uninoculated. The percentage of deaths with inoculated was one per cent., uninoculated three per cent.

* * * *

Crown and Robinson Fusion.

The meeting called to protest against the Crown Mines and Robinson fusion recently in London was a one-sided affair. It was well attended, and the resolutions were carried unanimously—as they usually are at meetings where the opposite side is voiceless. We note, from what has been said by Mr. Aubrey Hyman, that 99 per cent. of the shareholders are domiciled in Europe, but are surprised to learn that 85 per cent. hold bearer shares, and doubt the accuracy of his figures. Describing the proposals as "ridiculous," Mr. Hyman contended that Crown Mines, Ltd., is making a net profit of £1,700,000; that the directors and management are practically the same, and that the board should have obtained an impartial valuation of the Robinson assets. The resolution passed condemned the action of the directors of Robinson Gold and the agreement entered into.

* * * *

Tanganyika and Mr. William's Letter.

A reassuring letter from Mr. Robert Williams, managing director of Tanganyika Concessions, has been addressed to the shareholders of the concern, in which he mainly deals with native labour, copper smelting, and the company's capital commitments. Mr. Williams has no fear of labour troubles in Katanga, and his letter was evidently written in anticipation of a longer strike in South Africa than actually occurred. He however, points out that the distance between Katanga and Johannesburg is only 1,850 miles! He further remarks that the only difference a strike in South Africa may make to Northern Rhodesia is that labour will come to the latter rather than remain in the former. The quantity of copper produced at Katanga is likely to be doubled during 1915, and the two furnaces now at work are producing about 1,000 tons of copper per month. Mr. Williams sees no reason why he should change his estimate given at the last meeting of a cost of £57 per ton delivered in Europe. Negotiations for completing the Benguella Railway are proceeding satisfactorily. The critics are wont to call attention to the share capital of £1,000,000 sterling (of which £946,098 is issued) and to the debenture debt of £2,241,823. Mr. Williams counters by pointing out that, amongst some of the company's assets, are 2,700,000 shares of £1 each in the Benguella Railway, 98,000 Union Minière shares, 557,000 Rhodesian-Katanga Junction Railway shares, the Kansanshi mine, and a big area of mineral, coal and other lands in Northern Rhodesia. There is, he says, a value of six millions sterling against a debenture debt of £2,241,823.

TOPICS OF THE WEEK.

THE TRUTH ABOUT SOUTH AFRICAN MINING.

Signs multiply daily that all is not well with South African mining. There is reason to believe that what the member for Rustenburg in the Assembly called the "disquieting evidence" recently given by the Chamber of Mines before the Economic Commission has been exercising men's minds considerably, and ample proof of this can be found in the columns of the London papers to hand by this mail. The Minister of Mines, in his endeavour to reassure the House of Assembly during the week regarding the Chamber of Mines' evidence made the two points already set forth in these columns: (a) That the contents of the dormant areas of the Rand would doubtless be equal to the unworked tonnages of existing producing mines; and (b) that the Chamber of Mines' views being in the nature of prophecy, "it was not prudent to attach undue importance to estimates which attempted to extend our vision so far into the future." Though our own views of the Chamber's evidence is entirely in agreement with that of the Minister of Mines, the fact does not blind us to the failure of mining in this country today to realize its possibilities. To enumerate a few of the outstanding symptoms of the *malaise*, there are: (1) The dearth of capital for new mining ventures; (2) the closing down of many proved mines for want of funds; (3) the almost complete cessation of prospecting activity; (4) lack of speculation as evidenced by the inanition on the Stock Exchange. These things undoubtedly, taken altogether, constitute a very grave condition of affairs, and one that is not to be lightly disposed of by merely dwelling on the admitted evils of speculation or on the fact that agriculture is gaining in popularity in proportion as mining is losing. There is nothing, of course, necessarily inimical between the farming and mining interests; indeed, the healthy development of both is equally to be desired and reciprocally advantageous. To diagnose the trouble with mining in this country it is necessary to divide it into two spheres: (a) The Rand; and (b) the rest of the Union. To take the latter first, attention may be directed to a detailed *resumé* in another part of this issue, of the more notorious grievances of the long-suffering prospector and small man. That review makes it plain that mining in the "outside districts" at any rate is still the Cinderella of South African industries. It gives the reason why we hear every day of old mines being abandoned and never hear of new ones being discovered. It is, we claim, detailed, practical and conclusive evidence that the apathy of the Union Government towards mining in the outside districts is the chief contributory cause of the passing of the prospector and the opening of no new mining fields. Turning to the Rand, we find that the Government cannot be acquitted of blame for the present depression, while given all credit for its recent praiseworthy effort to remove one of the causes of that depression. The fact is that the Rand has never ceased to be the milch-cow of the Union; and that all its efforts to economise and cut down expenses with a view to prolonging the life of its industry have been thereby stultified. For the best presentation of this aspect of the matter, we have to go back to a speech made in 1911 to the visiting members of the Assembly by the then President of the Chamber of Mines, that appears, unfortunately, to have fallen on stony ground. Briefly, the points he made were: (1) That this is a factory turning out on an enormous scale an average value of about 27s. worth of gold from every ton of rock. (2) That a reduction of the present scale of working costs will ensure the existence of the industry for hundreds of years. (3) That this prosperous future can be guaranteed to the mines by a reduction of the indirect taxation, and by an adequate supply of efficient labour. He showed that the industry provided the rest of the country with a great and expanding market for its produce and a field of employment for its sons. He reminded his audience that the money invested in this reef represented a sum of at least one hundred million pounds sterling. The average interest on this amount which the much-abused shareholder receives at market price—reckoning the average life of the existing mines—is only about four per cent. per annum—or only a trifle more than he gets if he invests his money in Cape Government stock. And how small is this return when one considers the millions that have been spent in failure!—for only the successes are seen. It must be remembered that out of the thirty-six million pounds sterling which represent the annual gross value of our output of gold, approximately twenty-seven million pounds sterling are paid away locally every year in administration, wages, farm produce and stores, half of which latter are produced within the Union—and remember that of this eight million pounds sterling are paid every year in wages to 24,600 white men. And whilst most of these men are at present from oversea, what a chance of employment it affords to the youth of South Africa! Turning to the future of the industry, it is calculated that in these forty miles of reef, in addition to the payable ore, there are about four hundred million tons of ore just below the value of the present margin of payability—that is to say, the value of the gold in every ton is just below the present cost of extraction. If that tonnage could be extracted at a small profit per ton, the total amount accruing to the country would be represented by a sum of not less than two hundred and fifty million pounds sterling in taxes direct and indirect, wages and local produce. At to-day's cost of production this prosperous future for South Africa may be denied to it, and all over the country is ore of this value just below the present cost of production. " Think well before you decide to close it for ever!" said the President. " Once closed it will never be re-opened. Who will have the pluck again to ask the investor of capital to spend over a million pounds in a mine of this value, and wait as he has to to-day, up to five or six years before he sees any return on his investment? I simply ask, Which will pay the Treasury best: to keep the cost of production at a figure that will, within the lifetime of our children, see the last mine on the Rand closed, or assist in lowering the cost of production, and keep this country going for hundreds of years? Are there not hundreds of square miles of ground in the extensions east and west of this reef, and vast gold-bearing areas all over this Province that are known to exist, on which millions have already been spent, only waiting for the inflow of more capital—capable of giving employment to thousands of South African youths?—enough wealth to pay tens of millions of pounds every year, for hundreds of years, for wages and local produce—provided that the business men of the Union Legislature will only assist deliberately in giving every facility in the reduction of working costs and in solving the labour problem, in order that these minerals may be worked. You have a vast quantity of material—the largest diamond mine in the world—unlimited coal supply, untold quantities of tin and copper ore; and, to work this, capital can be obtained under fair conditions." So much for the taxation and native labour aspect. Fortunately, there are other directions in which relief can likewise be looked for. As we indicated in our article on the Chamber of Mines' evidence, applied science holds out big possibilities of reduction in working costs, and this view, we note, is emphatically endorsed by Mr. H. S. Denny, in his otherwise doleful account of " The Decline of the Rand," which we have reprinted. " It is not possible, of course," he writes, " to foresee what new methods may arise in the treatment of ores to lower the cost of production, but it may be taken for certain that as the margin between expenditure and revenue becomes narrower, so will the effort to keep them apart increase, and ways and means that are unknown to-day will be born of necessity to keep the industry alive." And again he writes: " The question of working costs is, after all, the crux of the whole problem now facing the Rand." The issues, therefore, are clear. By common consent on the Rand they turn on the question of working cost. In so far as the opening up of new mining fields elsewhere in the Union is concerned they depend on the attitude of the State towards the prospector and small man. The dynamic force and the predominant influence in both cases rest with the Government, or, in the last resort, with the enlightened self-interest of the people of South Africa. It shall be our business, in both cases, to accelerate the process of enlightenment.

SUNDAY MILLING ON THE RAND.

In recommending the stoppage of Sunday milling on the mines of the Rand the Majority Report of the Sunday Observance Commission appears to have come to an arbitrary decision, for which adequate reason is not adduced. It is true that there is a considerable difference of opinion among members of the Commission on the exact terms of the recommendation. The Majority say the stoppage ought to be effected in three years; one member, Mr. Kolbe, favours the insertion of the words, " from the date of the signing of this report"; and Mr. Wybergh, not to be outdone in strict Sabbatarianism, plumps for only two years' grace. The point about these views is, of course, that all run counter to the strong advice and representations of the official spokesmen of the mining industry, and that they are expressed with an airy disregard for history, precedent and commonsense. How history and precedent are flouted will be shown in a moment. The amazing feature of the whole thing, however, is the illogical nature of the main reason given in support of the decision of the Commission. It is solemnly argued that since mine managers are supposed to be worried trying to keep their big mills fed with ore for seven days in the week under existing conditions, the State will be conferring a blessing on them and on all concerned by declaring that in three years they shall only have to strive for six days' supply to the mill. But even admitting that most mine managers to-day do have to worry unduly to keep their mills fed for the whole week, which we have no official evidence to warrant, there is not a vestige of reason to suppose that they will still be doing so in three years' time. It is the belief and earnest hope of everybody concerned with the industry that by 1917 the labour trouble, such as it is, will be far less serious than to-day, and the whole validity of the reason given by the Commission is, therefore, vitiated. As a sample of reasoning, indeed, the point is typical of much more in the section of the report dealing with the question of Sunday milling. Thus the history of the findings of former Commissions, at least as competent as the present one, is cooly ignored. The running of mills on Sundays was considered and confirmed in 1898, 1903, 1905 and 1909, after the Mining Regulations Commission, presided over by Dr. F. E. T. Krause, K.C., had reported in its favour, and lastly the Union Act of 1911 once more affirms the principle for existing mines. Another impossible argument seriously advanced in the report is that, because some of the Rand mines have managed to survive the effect of enactments calculated to depreciate the value of the shareholders' investments and reduce the return on their capital, there is no reason why more burdens should not be added. The Report takes no cognisance of the fact that burdens of this sort must have a limit, that shareholders are not for ever to be mulcted " going and coming " without capital flying from the land, and that the expropriation such as this of existing rights in all civilized countries is accompanied by compensation. Since 1911, of course, the two new mills started up, namely, the Consolidated Langlaagte and the Van Ryn Deep, have under the law of that year been compelled to cease work on Sunday, and heavy increased capital expenditure has had to be incurred by both companies to meet the requirements of the Act. Incidentally, a very significant table is included with the Sunday Observance Report. The Commission profess not to be able to understand its meaning, though it was compiled at their own request from statistics officially supplied by the mines. To our reading it simply proves that owing to the practice of Sunday repair work quite as many white men were employed on the Consolidated Langlaagte mill on Sunday as were employed at neighbouring mills that were not compelled to cease running. The fact that the lesson of these figures is all against the arguments of the report may in some quarters be taken as the reason why the Commission failed to admit their significance. We give the Commission credit for more honesty, if less mental quickness, than to assume that. On the whole, however, the document is far from convincing, and the best we can wish it is a decent burial in the family vault in company with the remains of its unlamented relatives, the reports of the Creswell and Cullinan Commissions.

What is Wrong with South African Mining?---I.

Why Prospecting and "Outside" Enterprise Languish—"Small Man" Crushed Out of Existence—No State Aid or Recognition—Exorbitant Claim Licences—Mass of Restrictive, Red Tape Regulations and Other Gold Law Anomalies.

In view of the numerous fears regarding the decline of mining on the Rand expressed in several influential quarters of late, and, further, of the growing popular belief that mining in South Africa is rapidly deteriorating, and prospecting losing its attractions, we have invited for publication the views of leading engineers and mining men on the following questions: In Regard to the Rand: (a) Do you think it would pay the Government to prolong the life of the fields by reducing indirect taxation? (b) Should the Government help the industry by direct financial assistance for scientific research work in the form of the Mines' Trials Committee or some similar body? (c) By using its influence in the sphere of unskilled labour, can the Government do anything to prolong the life of the industry? (d) Can you suggest any other way by which the Government can help to attract capital, open up dormant mining areas and so to prolong the life of the industry? (e) Do you forsee any opening for further reduction in working costs, and if so, in what direction? In Regard to the Rest of the Union and New Discoveries: (a) Do you consider the Government should encourage prospectors and "small men" by: (1) Reducing or abolishing claim licences? (2) Throwing open all farms to prospectors, with due safeguards? (3) Foregoing transfer fees? (4) Direct financial assistance? (5) Waiving mining regulations? (6) Or in any other way? And, generally, would you favour a Government Commission to enquire into the for going?

No apology is needed for again directing attention to the disabilities under which the "small man" engaged in mining groans in the Transvaal. No great question of party politics is involved, since the charge against the Government of neglecting his interests amounts to accusing it of a sin of omission, which the Union Government can, if it be sympathetic, soon rectify. The treatment of the "small man" in mining, unfortunately, is not merely symptomatic of the attitude of the Government towards mining in general, but it is infinitely worse than the treatment meted out to established mining enterprises, and as such is both foolish and unfair. The "small man's" quarrel with the existing order of things is twofold. He declares he is offered neither help nor sympathy from a Government that prides itself on its tireless anxiety to advance the industrial interests of the country. His second complaint is equally serious and well grounded. He is disheartened to find that between the struggling small mine, battling with all the necessary risks of mining, and the proved and successful "proposition," no discrimination is made by the Government. The unjust incidence of the Mines, Works and Machinery Regulations on the small mine was forcibly explained by a correspondent in our columns recently, and the views of Mr. Wm. Bleloch on kindred grievances are printed in full below. While agreeing with our criticism of the manner in which the Government had persistently overlooked and ignored the claims for assistance which small mines and men so readily receive from the Governments of other countries when engaged in exploiting the mineral wealth of the land, our correspondent declared that the most important factor which militated against the small mines industry in the Transvaal was the irksome and, for a small mine, the utterly impossible code of the Mines, Works and Machinery Regulations. These regulations may be necessary for the big mines on the Rand and elsewhere; but, if enforced, they form a most crushing burden on a small mine. Our correspondent cited the instance of the regulations for the health of coloured labourers. These would, if enforced, necessitate the expenditure of the entire working capital of most of the small mines before a pick was put into the ground. Since the advent to power of the present Government Mining Engineer even ordinary prospectors are required to send in elaborate monthly returns—this is sometimes enforced and sometimes not. All mines are placed, legally, on precisely the same level as regards the regulations, and although these regulations may not be too irksome for a big mine, they are absolutely impossible for a small worker to carry out. No doubt, it is true that these regulations are not enforced on small mines, but the manager or tributor of a small mine has always the fear before him that some over-officious mine inspector may some day quite unexpectedly drop on him for having contravened the regulations. He has therefore to take his choice between the two alternatives of either attempting to carry out the regulations and thus rendering the chance of making his mine a payable proposition an impossibility, or he has simply to ignore the regulations and thus lay himself open to frequent prosecutions for negligence. As our correspondent put it, "most people recognising the impossibility of complying with the regulations adopt the latter course and thus deliberately defy the law of the country. But if these regulations are intended to be merely winked at and not enforced, why are they allowed to still disgrace the pages of our law books? And yet they remain as a constant menace to the small mine worker who may happen to get on the wrong side of a mine inspector. What we really want is a very simple code of regulations suitable to the requirements of our small mines, which, whilst guarding against any reckless and dangerous mining, will be possible and practicable for a small worker to carry out." To draw up such a code would be as simple as to distinguish between a small and a large mine, and its effect on the growth of the small mine movement could not fail to be considerable. Even more stimulating would be the adoption by the Government of the suggestions made by Mr. Bleloch. Those suggestions, in effect, merely reiterated the desirability of open prospecting, within proper limits, and of allowing exemption from the burden of claim licences, costly diagrams and transfer fees to mine "prospects" in the initial stages. A similar principle was advocated in connection with the Vaal River diamond diggings. In that case we advocated the substitution of a royalty on "finds" for the present onerous claim licence. The principle underlying the last three of Mr. Bleloch's suggestions and our own is the same, namely, the taxation of results instead of capital and effort. No doubt much of the apathy exhibited in regard to these desirable reforms is due to the paucity of small mines in this Colony. Rhodesia was saved by her "small men," who grew strong enough in numbers and influence to secure increased freedom and consideration. There was a time, not so long ago, when the future of the "small man" in this Colony seemed dismal indeed. But the activity across the Limpopo has had a reflex action in mining on a small scale here. Barberton and Pilgrims Rest are beginning to wake up under the stimulating influence of the Rhodesian example. The present moment therefore is wholly opportune for them to ask for reform and see that they get it. Over and over again in these columns have we pointed to the enlightened and progressive policy pursued by several of the Australian States in this respect, and by the last mail there arrived a statement showing that Victoria alone spent no less than £380,000 in advances and facilities to prospectors and "small men" in the past twelve years. In the Transvaal not only is there little or no encouragement extended to the prospector by the State, but the "small man" or syndicate of limited resources is hampered and penalised at every step. Apparently the aiding "infant industries" argument does not apply to mining, though as a fact the early stages of a mining enterprise are invariably those when support is most needed. Mr. William Bleloch, a pioneer of many small ventures in this Colony, has favoured us with a statement of his views on the needs of the "small man," and as Mr. Bleloch's views are based on actual and often painful experience, we purpose quoting him at some length. According to Mr. Bleloch, the following alterations in the present Transvaal Gold Law are urgently required: (1) Open prospecting for the whole country, under conditions safeguarding the rights of owners secured to them under the present Gold Law. Such conditions to include proper securities or guarantees to the satisfaction of the Mining Administration for compensation to the owners for any damage which may result from prospecting work being carried on. Complete exemption should be given for farms or portions of farms used for ostrich farming or any other class of farming which cannot be successfully carried on if prospecting is permitted; in other words, exemption should be given on all lands where the owner or farmer can show that prospecting would be clearly detrimental to his bona-fide farming interests. To the prospector, a substantial reward in claims, to be held free of licence money while they remain his own property. Mr. Bleloch agrees with us that exemption should also be given where owners of farms have made their own arrangements whereby prospecting is either in progress or in contemplation. (2) Remission of all licence moneys on unproved claims provided proper prospecting work is done to the satisfaction of the State Mining Engineer. The amount of work to be in proportion to the number of claims held. A given amount of work to entitle the holder to remission of licence money for a given period, thus embodying the principles of the Rhodesian Gold Law. The holder of claims to have the option of effecting such work or of paying the present scale of licence moneys. When the reef is proved the claim licences to be paid, but no fines to be levied in case of arrears during the three months' grace provided in the present law. (3) Deletion of clause in the Gold Law requiring confirmed diagrams before granting transfer of prospecting claims on the Rand. (4) No transfer duty to be charged on the first transfer of prospecting claims from the pegger to the first purchaser, whether an individual or a company. The first recommendation is self-explanatory. The second, it is claimed, would enable claim holders to apply their capital to opening up and proving their claims, by prospecting and diamond drilling, instead of having to pay it to the Government, and thereby undergoing a gradual process of ruination. The contrast between the treatment by the Government of the farmer and of the mining man can be clearly seen in the leniency to the farmer who falls into temporary shortness of cash, but who can borrow from the Land Bank at four per cent., and is given ample time, sometimes twenty years or more, for repayment. The unfortunate claim holder may have spent thousands of pounds in licence moneys and expensive undertakings to improve his property, and may have lost nearly his all. If he is behind in his payment of claim licence money for fifteen days he is fined twenty-five per cent. per month, and if he does not pay within three months his property is confiscated and all his expenditure goes for nothing! The process is similar to what would happen if the Government levied a seventy-five per cent. tax on the farmer's seed corn. The third reform would remove a useless burden from the Rand claim holders which is not imposed in other parts of the Colony. Owing to slight discrepancies between surveyed diagrams many months often occur before the confirmed diagram is obtainable. During such a period licence moneys are strictly enforced, although according to the present law clear title is not held. As regards (4), it should be explained that the practice before the war was that the first transfer was based on a nominal value of about £1 per claim. Now it appears that having found a man foolish enough to peg or buy prospecting claims, which have no value except that which may be created by the man's own energy or knowledge, the Government's chief aim is to go beyond even the exorbitant five shilling per month claim licence, and it proceeds to hasten the ruin of the enterprise and the man by extorting money at every turn before a pick or spade can be put into the ground. It is only fair to add that Mr. Bleloch emphatically declares that he has found no cause for grievance against the big houses in the course of any dealing he may have had with them; on the contrary, he has always obtained just, and even liberal, treatment, especially if one considers the situation created by the Gold Law. The great oppressor of men of small capital who venture into mining enterprise is the Government, which constantly fleeces them of the capital required to bring about a success. In order to show the effect of the present law in the matters referred to, a concrete example furnished by Mr. Bleloch may be useful. It appears that in March, 1909, a block of 570 claims was pegged, and it was only in December, 1909, that claim title could be obtained, the delay being caused by reason of the confirmed diagram clause. Meantime claim licence had cost about £1,400, the survey charges, transfer duty, legal and other expenses had brought the expenditure up to £2,100 before the ground could be dealt with or prospecting commenced. This heavy toll exhausted the resources of the claim holders, and the assistance of a financial house was sought and obtained. The house in question then spent about £3,000 on the property—about £1,800 in drilling and £1,200 in payment of licences. So that there was expended on the property from March, 1909, approximately £5,500, of which about £3,700 had gone in acquiring and maintaining the title and only £1,800 in actual work. A sum of nearly £3,000 was thus paid directly to the Government. Even the financial house which had taken up the ground groaned under the burden, and as the reef was not quickly found, gave up the search, and the whole enterprise then collapsed. This is a typical case, and it means that it is simply impossible to have a gold industry owned to any extent by the people of the country under the conditions of the Transvaal Gold Law. We hear much in these days of the danger of domination by a capitalistic Government, but it is questionable whether the most selfish and short-sighted Ministry of plutocrats could devise a more effective scheme for breaking the heart of the "small man" engaged in mining than that which now disgraces the Statute Book of the people's Government. When will our Government of lawyers turned financial experts learn that there is a science of taxation?—that the imposition of taxes upon effort and upon the working capital of small mining ventures is both unfair and unscientific—unfair because no other industry is thus strangled at its birth, and unscientific because it kills off revenue-producers of great potentiality.

MINING MEN AND MATTERS.

Mr. Ross Skinner has returned to the Rand.

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Mr. Percy Cazalet, one of the consulting engineers of the Corner House, returned to the Rand this week.

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Mr. Victor Hartog, B.Sc. (Cape) and Master of Arts in Geology, Columbia University, New York, has been appointed Assistant Government Inspector of Mines for Germiston, Transvaal.

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Mr. Paul Dobell, general manager of the Jagersfontein Company, will retire next month. For 20 years he has conducted the affairs of the company. Mr. Dobell proposes to take up his residence at the Cape.

The following are the Mine Overseers' Certificates issued between 14th January and 4th February, 1914:—Metalliferous Mines: D. Y. Calderwood, R. L. Mann, H. H. Holland, A. G. Barratt, G. Sheldon, J. Johnson, W. Muir. Collieries: E. Davies.

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The nineteenth annual general meeting of members of the Association of Mine Managers of the Transvaal will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Friday, 20th February, 1914, at 3 p.m. Business: (1) To read and confirm the minutes of the eighteenth annual general meeting held on the 16th February, 1913; (2) to receive and consider the report of the Council on the state of the Association, together with the annual statement of accounts; (3) to elect a president, vice-president, and eleven members of Council for the ensuing year.

FAR EAST RAND MINING LEASES.

State Controlled Areas That Will Become Productive—The Future of the Brakpan-Schapenrust and Witpoortje Properties.

It may be recalled that in March last the Government again offered the Brakpan-Schapenrust area for tender, but there was no response, and neither in regard to this property nor in regard to Witpoort, which was offered for tender about the same time has anything been heard for several months past. We mention the matter because under the new order of things on the Rand something may be heard of these State leases in the not far distant future. Undoubtedly European investors are now inclined to look more favourably on Rand mining enterprises than they were during the period that a sword of Damocles in the shape of strikes and perpetual industrial discontent hung over the Rand.

The Modder Areas.

Another matter which may have some bearing on the future of the Brakpan-Schapenrust and Witpoort leases is that before the end of this year the Government Gold Mining Areas property on Modderfontein will be crushing. In our last issue we directed attention to the latest development results secured by this company, which are on the whole most encouraging, and as the first section of the mill—of 50,000 tons per month capacity—will be operating before the end of the current year it seems probable that the attention of capitalists will be directed towards the large State-owned mining areas of the Further East Rand at an early date. It may at this juncture be interesting to recall the fact that the scheme of Government leases which was substituted in the last gold law for lottery and individual pegging methods had as its first result the registration of the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., in February, 1910. The feeling in regard to South African mining enterprises is, of course, much more hopeful to-day than it was a few months ago.

PEGGING ACTIVITY IN THE NIGEL DISTRICT.

A Considerable Number of Claims Acquired—Position of the Sub Nigel.

Recently a considerable amount of pegging activity has been noticable in the Nigel district, and we understand that within the past month or two a fairly large number of claims has been taken up. The Sub Nigel Company a little time ago pegged some claims adjacent to that property which in the opinion of the management of the Sub Nigel it was desirable the company should acquire. But the ground taken up on that occasion was not very large, and it is clear that another firm or syndicate has been responsible for the recent activity in this district. Enquiries have so far failed to elicit any definite information as to the identity of the peggers, but it is generally inferred that this activity in a district which has lain practically dormant for some considerable time is in large measure due to recent satisfactory developments in the Sub Nigel Mine.

The Sub Nigel.

It may be recalled that the Sub Nigel Company commenced the payment of dividends to shareholders in December, 1912, and that since that date the company has been earning substantial profits. Development at this mine is proceeding satisfactorily, and although the Nigel Reef is a notably erratic ore body, the company has developed a very considerable tonnage of profitable ore. For some time past schemes for increasing the equipment of the mine have been under consideration. The capacity of the existing plant is 4,500 tons per month, and there have been two proposals: (a) to increase to 8,000 tons per month; and (b) to increase to 15,000 tons per month. It is now officially announced that the existing plant will be brought up to 8,000 tons capacity during the next few months.

Past History.

As is generally known, the Nigel and the Sub Nigel are the only two producing gold mines in this district. Their returns, according to the Chamber of Mines analysis sheet for December, were as follows:—

	Output.	Value per Ton.		Costs per Ton.		Working Costs	Profit.	Profit per Ton	
	£	s.	d.	s.	d.	£	£	s.	d.
Nigel	19,578	29	0	25	1	16,315	3,043	4	8
Sub Nigel ...	11,367	47	10	32	4	7,682	2,072	8	9

In the early nineties the Nigel field attracted a considerable amount of public attention on account of the rich finds of the Nigel Gold Mining Company, which was securing from a small obsolete form of mill a yield of gold exceeding £7 to the ton milled. The Nigel area (as it is called) is situated about 20 miles south-east of Johannesburg, and approximately nine miles north-east of the township of Heidelberg. The culmination of excitement in respect of the district would appear to have been about the time of the over-speculation of 1895, when there were approximately a score of different companies with areas parcelled out adjoining or near the Nigel Mine proper. The Nigel Gold Mining Company proper went fast and furiously to work upon its thin reef, which has undoubtedly indicated that there are considerable patches of very rich gold deposits. To this day it remains extremely uncertain as to the trend of the reef in the field, but its existence in the ground of the Nigel and Sub Nigel has been proved beyond question. Theorists have held, and still stoutly maintain, that the reefs exposed in this southern area are the edge of a basin, of which the Witwatersrand Main Reef series is the northern edge. A large majority of about a score of companies which existed early in 1895 have disappeared, through windings-up or incorporation into other companies. Recent pegging activity would seem to indicate that there is some return of interest in this area. As already remarked, the much improved condition of the Sub Nigel mine has probably been the main incentive to acquire abandoned claims. Those responsible for the recent pegging no doubt hope to pick up extensions of this erratic and thin but very rich ore body.

Luipaardsvlei Estate.

The following is the result of last month's operations:—60 stamps ran 26·295 day, crushing 15,150 tons, yielding 1,601 fine ozs; 3 tube mills ran 25·849 days, yielding 602 ozs. fine gold; sands treated, 10,700 tons, yielding 1,186 ozs. fine gold; slimes treated, 4,450 tons, yielding 457 ozs. fine gold; profit from operations, £416; sundry revenue, £900; total profit, £1,316; working costs per ton, 20s. 9d.; total working expenses, £15,738; decreased profits due to strike, mill stopped four days, operations considerably disorganised and expenditure substantially increased owing to general unrest.

THE TRUTH ABOUT MINERS' PHTHISIS.

Applications Exceed Estimates—Awards Amount to £1,156,592—First Stage Cases Number Only 5 per cent. of Total—Shortcomings Revealed in Operation of the Act—Special Committee to Investigate.

As was generally expected, the working of the Miners' Phthisis Act was one of the first questions brought up in the Union Assembly this session. Some valuable information was vouchsafed by the Minister of Mines in dealing with the matter. It appears that in the three months ended January 31st, the Board had dealt with 675 cases, some of which, of course, were new cases. There remained at the end of January 500 old and new cases to be dealt with. The awards made during the three months ended January amounted to £140,324. The total number of applications dealt with by the Board to date was 4,554. The amount paid out under the temporary Act of 1911 was £58,383. There was paid out in lump sums in all £342,468. There were also paid out, or awarded, annuities, the total amount of liability incurred by the Board being £755,668. This made the total amount of awards by the two Boards, since 1911, £1,156,592. Of the 4,554 applications, there were 269 which did not fall under any provisions of the Act, there being no signs of silicosis, men having applied on the off-chance of having the disease, and found free of it. Applications under Section 21a—that was the 12 months' cases—numbered 1,030. Under Section (b) (four years' cases) there were 2,892. Of this last number, there were 750 individual dependants. Just over 100 cases in the first stage and about 2,000 cases in the last stages of the disease had been dealt with. The number of applications withdrawn was 19. The total number of cases dealt with by the Board was 4,524. On Tuesday, Dr. Macaulay, the member for Denver, moved that a Select Committee be appointed to enquire into the working of the Miners' Phthisis Act, 1912, the Committee to have power to take evidence and to call for papers, and to consist of nine members. In doing so, he said he had been given to understand by the Minister of Mines that he was prepared to adopt the motion for the appointment of a Select Committee. There was not the slightest doubt that a good many abuses did crop up in the working of the Act. Cases of hardship had occurred, and he did not know that the present system of money payment was the best way of carrying out the intentions of that House. In reply, the Minister of Mines said that he accepted the motion, not in the spirit of wishing to pass any reflections on the work of the Miners' Phthisis Board. He thought the Board, on the whole, had been dealing with a very difficult problem and a large number of cases very satisfactorily, but there were a large number of questions in connection with the Act which might be usefully enquired into. He cordially welcomed the proposal to appoint a Select Committee of Enquiry, and now that exact data are for the first time available, we look forward to most valuable results being reached. It is understood that many suggestions will be made from various quarters for dealing more satisfactorily with the sufferers.

PROGRESS IN THE TREATMENT OF DIAMONDIFEROUS GROUND

A Gyratory Gravitator and What it Promises to Do—A System of Stage Crushing for Recovery Plants.

It may have been remarked that there has been little progress or sign of new method in the treatment of South African diamondiferous ground during recent years. Practice in regard to the disintegration of kimberlite and the subsequent recovery of diamonds seems indeed to have remained stationary for a number of years past. It may, in fact, be asserted that not since the wholesale introduction of tube mills into the equipment of the Premier Diamond Mining Company, near Pretoria, eight years ago have there been any alterations in or additions to the plant of diamond mining concerns in South Africa which can in any way be characterised as revolutionary.

A Purely Mechanical Method.

It may at first sight seem strange that whilst so many inventions have been introduced into the metallurgy of the auriferous conglomerates during the past half a dozen years the broad outlines of the method of recovering diamonds from diamondiferous ground in South Africa have remained practically unaltered. Yet on closer investigation of the matter there is nothing so very remarkable in the fact that the metallurgy of gold mining has moved forward rapidly whilst at the same time the treatment of diamondiferous ground has not changed. The recovery of gold from its ores involves both metallurgy and metallurgical engineering; in other words it calls for talent and application of that talent in the directions of both physics and chemistry. The recovery of diamonds from kimberlite, whether it is hard compact "blue" or the soft atmospherically decomposed "yellow," or whether it is gravel, is a mechanical problem purely and simply. At different times chemical processes have been suggested for disintegration of the blue ground, but so far these all appear to have come to nothing, and the recovery of diamonds remains a mechanical process.

A New Machine.

It is, however, most interesting to learn that at the present moment experiments which may have a most far-reaching effect are in progress in regard to the treatment of diamondiferous ground. These activities may, in fact, be said to have passed beyond the experimental stage, for a machine has been erected in Johannesburg and has been testing the application of an idea which, although not new, has never yet been satisfactorily applied. The results seem conclusively to indicate that a much quicker and cleaner separation of the heavy concentrates can be secured than hitherto. The machine we refer to is named the Cox's Gyratory Gravitator. It is very simple in its construction and can be inexpensively operated by unskilled labour. The machine consists of a sieve operated by a plunger in a circular metallic tub, and the principle of the Cox method of concentration is to impart a gyratory motion to the sieve. The water in the sieve is subjected not only to an up and down pulsating movement through the plunger but is also rotated. The whole scheme may be likened to the vortex of water escaping down a bath pipe when the plug has been taken out, and by this method the heavy deposit containing the diamonds is concentrated in the centre of the sieve. The Cox Gyratory Gravitator was primarily designed for alluvial wash, but that it will do good work when operating on mine ground seems undoubted, and with a view to further testing the efficacy of the appliance one gravitator is, we understand, being despatched to the National Diamond Company's property, whilst it is proposed to erect one or two of the machines on the ground of the Harrisdale Diamonds, Ltd. It is claimed for the Cox's Gravitator that its capacity is equivalent to that of four 5-foot rotary pans.

Stage Crushing Applied to Kimberlite.

Another matter of considerable interest which we learn of is that the De Beers Company are now engaged in erecting a new plant on the western side of the town of Kimberley which will aim at the alteration of the general practice of diamondiferous ground in some degree. If our information proves correct it may be that in the course of the next year or two there will be a very appreciable change in the general method of recovering diamonds from the volcanic rocks which enclose them. There are some experienced men who contend that a system of stage crushing can be applied to diamond mining and that much of the puddling and elevating that forms such a prominent part of present practice, may be done away with, and that by the new method there would be large saving of water and a general simplification of method attended by better results.

THE MALIDYKE MINE AT PILGRIMS REST.

History and Geology of an Interesting "Outside" Producer.

The recent re-opening of the Malidyke Mine in the Pilgrims Rest district lends interest to the following description of the history and geology of the property included in Mr. C. B. Horwood's recent account of "The Rand Banket." Mr. W. H. Rundall, managing director of the South-East Africa Co., Ltd., gave Mr. Horwood the following particulars of the dyke, which is known as the Malidyke (*mali* is the native word for money). It pierces the Black Reef and dolomite series and outcrops on the farm Graskop, just south-east of Pilgrims Rest. Near the surface it is reddish-brown and much decomposed; in depth it is hard and is dark green in colour, and much fractured. In the decomposed zone the magnetite remains unaltered, while the pyrite is converted into limonite; the decomposition of the chalcopyrite being manifested by an occasional greenish stain. For about a mile the surface of the dyke has been extensively worked by sluicing, some of the workings being of great size and as much as 70 to 80 ft. deep. Between 1870 and 1880 considerable quantities of gold are said to have been won from a small stream known as Digger's Creek, running below and parallel with the dyke. Large piles of débris and boulders and numerous channels cut to divert the stream from its original course testify to the activities of the old diggers, who, after working the gold in the creek, turned their attention to the outcrop of the dyke itself. Within recent years quartz veins have been located, both within the dyke and on its contacts, below the level to which the outcrop of the dyke had been stripped by sluicing. A small 5-stamp mill and cyanide plant has been erected; running intermittently it has produced some £12,000 worth of bullion. An analysis of an average sample of the dyke made up from samples taken at regular intervals over a section of 120 ft. gave 15½ dwts. gold and 6½ dwts. silver per ton; besides iron, it revealed the presence of a small quantity of copper, bismuth, and a trace of nickel. Concentration tests have proved that the gold is present in an extremely fine condition. Well-defined lenses of vein-matter are sometimes found, on the contacts of the dyke with the sedimentary beds, varying from a few inches up to 3 or 4 ft. thick and some hundreds of feet long. The veins sometimes leave the contacts and continue in the dyke with sinuous courses. Profitable ore has been found on both sides of, and also within, the dyke. The gold contents vary greatly within short distances, samples taken only 2½ ft. apart often giving very different results. High assays are more often obtained where the ore is coloured a bright red with iron oxides; and below the permanent water-level the undecomposed pyrite gives good gold assays. The "reefs" are not continuous throughout the length of the dyke, either within it or along the contacts; on the latter there is often only a few inches of selvage matter. Within the dyke there may be a regular stockwork of quartz leaders, but no defined vein; or there may be considerable bodies of white, fractured, barren-looking quartz which give traces of gold; or sometimes a well-defined lode with good gold contents. Rundall ascribes the origin of these "reefs" to the dyke intrusion and subsequent contraction, and to the circulation along the fractures thus produced of deep-seated mineralizing solutions.

HARRISDALE DIAMONDS.

Prospecting Work Along the Barkly Fissure—Disclosures to Date.

Some interesting work is now proceeding on the Harrisdale diamond property in the Barkly West district. This proposition has recently been formed into the Harrisdale Diamonds, Limited, and it may be worth while to state briefly what the operations so far undertaken have resulted in. The most important result of prospecting operations for a deep mine has been the location of the extension of the Barkly fissure on the farm H.V. 5. The strike agrees exactly with the strike at Barkly and the kimberlite filling the fissure is identical. The Barkly fissure has been worked now for nearly two years by many diggers and always carries payable diamonds wherever worked; in some places it is very rich. On Harrisdale very little work has been done on the fissure, but now that it is definitely located it will be opened up at several points and washing will be gone on with without delay. On the fissure at a point about half a mile south of Meyer's Prospect, work has been going on for the past two months, opening up by means of shafts what has now, we are told, been proved to be a true mine or pipe of an area of 200 claims or more. The pipe is directly on the Barkly fissure, but the kimberlite which it contains is true pipe kimberlite, quite different in character to the kimberlite of the fissure. The pipe has been formed later than the fissure as is shown by the fissure ground ceasing at both points where the fissure enters the pipe. The pipe kimberlite is of a very greasy nature, much more so than that of other mines in other fractures in the neighbourhood of Barkly, the material in these being harsh and gritty and as a rule almost without diamonds. The pipe now being opened is on a line of fissuring known to carry diamonds in quantity, and the appearance of the ground and the deposit (garnets and ilmenite) which it carries is a highly favourable feature, indicating that it will probably be a good diamond producer. The mine is dirty on top, but at 56 feet clean, beautiful yellow ground of the true mine type is being taken out. Diamonds were found some years ago from some washings made from mixed shaly and lime ground taken from where the fissure enters the pipe from the west, but no washing has been done of the ground now being taken out. Boring is proceeding about 200 yards west on the fissure for the purpose of obtaining a supply of water for washing. The fissure has been traced from about a mile further east, and there are indications of another pipe existing on it at about that distance from the one now being opened.

Alluvial.

Work is being commenced this week on the extension of Meyer's Prospect, which has now been definitely located to the north-west. A scheme of drilling for water is being carried out, the intention being to put down several boreholes, one each to supply the Mine, Meyer's Prospect Extension, Patterson's, Sheppard's, and Van der Merwe's diggings.

THE DECLINE OF THE RAND.—II.

A Critical Review of Present Day Position and Prospects of the Industry.

[By H. S. Denny.]

THE LABOUR SHORTAGE.

The labour difficulty has been more serious than is realised by most people outside the Rand, and ever since the repatriation of the Chinese, there has been a shortage in the supply. It will be remembered that at the end of the Boer war there was a great deal of optimism regarding the supply of native labour, and the leaders of the industry, men of great experience, were confident that with the declaration of peace would come a big inflow of natives. In this they were disappointed. When it became clear that the supply was unequal to the demand, recourse was had to Chinese labour. The initial cost of the introduction of this labour was exceedingly heavy, first because of the stringent regulations in regard to housing and feeding, and the control generally, and, secondly, because of the inexperience of the coolie in mining. No sooner had the industry fought its way through these difficulties than the Chinese labour question became a political gambling counter, and most unjustly it was decreed that the coolie must be repatriated. Thereupon the old difficulty in regard to native labour was renewed, and the industry suffered a serious misfortune, and incidentally a number of the mines, whose equipment had been increased on the assurance of a full labour supply, found themselves unable to keep their mills adequately supplied with clean milling ore. Wider stoping and the more extended use of machine drills were adopted to meet the difficulty, with the results already indicated. Unfortunately, the average width of the ore bodies of the Main Reef series is low, especially in the higher-grade stopes, and the shattering effect of blasting heavy machine-drilled holes inevitably led to the inclusion of much fine waste rock that defied the closest sorting operations.

THE INTEREST CHARGES.

From the financial aspect, the increase of milling equipment necessitated the finding of large sums of money and led to watering of capital on a big scale. The money was either obtained by the issue of new shares, or by borrowing at fairly heavy rates of interest. In the former case, the dividends had to be distributed over an increased share capital; in the latter case, profits had to be absorbed over long periods for repayment of the loan. Since the increased profits were not commensurate with the redemption of the increased capital, the shareholder naturally suffered. The issue had been obscured, however, because of the practice of declaring "working profits" per ton—an arbitrary figure that takes no cognisance of either capital redemption or dividend distribution. A good deal has been written on Rand methods of bookkeeping, and it has been shown that on the monthly profits declared by the various companies approximately only 60 to 80 per cent. is actually distributed in dividends. Custom regulates practice in the matters, and once having begun the policy of issuing this form of statement it became almost impossible to alter it. The term "profit," however, if it be rightly interpreted, permits of none of these fanciful constructions, and the use of the word on the Rand had, therefore, been incorrect and calculated to mislead. Many mines have been in the habit of declaring "monthly profits" when the amount of such "working profit" would not nearly cover a conservative contribution to the interest and redemption fund; in other words, while declaring "working profits" the company was actually losing money. While there may be, and doubtless is, much to be said from the financial expediency point of view, in favour of running a "working account" that makes no provision for capital redemption and that permits of independent current capital account, there can be no argument as to what, in the strict business sense, the practice should be. So long, however, as custom permits, there is little probability of a change. Selective mining, like increased milling capacity, is, in principle, easily capable of abuse, although, frankly, I am of the opinion that for the Rand a little more of the former and a lot less of the latter would, all things being considered, have been better. So long as selective mining is followed on the principle which has for its foundation the desire to earn the maximum profit, and into the calculation of which all those essential considerations of capital redemption and working expediency are included, so long and so far will it be profitable. There can be no law laid down for its universal application, because the conditions are never quite the same in any two mines, and each must be figured out on its own merits. In the earlier history of the Rand, and in the shallower zone, nature had so arranged matters that in most cases selective mining was imperative, that is to say, that owing to surface concentration, the proportion of high-grade ore on the upper levels was greater than is found in the deep levels to-day. In effect, therefore, the average grade of ore on these levels in comparison with the average grade down to the lowest workable depths would represent a selected product, or, in other words, to reproduce the same average grade of ore from the lower levels, would, under present conditions, require a great deal more selection. It has been argued, in fact, it is still argued, by some, that there is no diminution in the grade of Rand ores as depth is attained, but the argument can hardly be supported by a reference to the facts, and indeed it requires only a cursory study of the statistics over the past few years to be satisfied on this point. On several occasions lately I have not hesitated to express my views in this connection in writing, and in 1911 F. H. Hatch, the well-known geologist, made the following statement:—"I have not been able, with the material at my disposal, to come to any definite conclusion on this point; but I am inclined to the view that a general impoverishment in depth does exist. It would be quite possible, from existing records and assay plans, to settle this really vital question; but hitherto no figures relating thereto have ever been published by any of the big houses." It is interesting to note that very recently one of the largest of the groups on the Rand included in its technical statements the following:—"There can be no doubt that there is a gradual falling off in the average values over large areas of the ore developed as the deeper sections of the Rand are opened up, and the time will come when the full importance of considering every point which will tend to the lowering of costs for the successful treatment of enormous quantities of low-grade ore will be realised by the Government and the general public of South Africa at large. This fall in average grade with depth at the individual mines have been shown to be true, not only by the screen samples of the ore milled and by the recovery value per ton, but by the careful sampling and assaying of level by level in each mine as greater depth was reached, by careful sampling of stopes on each level sending ore to the mill, and by the yearly recast of the ore reserves in each mine." The mere fact that high-grade ore is still found to occur in the deep levels is of no weight in the argument. The question is one of average width and value per foot of linear development, and the available evidence of a gradually falling grade, so far as my information goes, appears to be overwhelming. But, to my mind, there is nothing extraordinary in this; on the contrary, it is in keeping with all mining history, and is, in the nature of things, to be expected. And surely it is better to have had miles of high-grade ore shoots of lateral continuity than isolated and narrow vertical shoots descending miles on the dip. The question requires no discussion. Out of a total production of £347,054,851 from 1887 to 1912, dividends amounting to £88,159,489 have been paid, equivalent to about 25 per cent. of the gross production. From 1890 to 1912 the world's production had risen from £24,421,000 to £98,267,000, and of this latter figure the Rand is responsible for roughly 40 per cent. Of the total increase in the year 1912, as compared with the year 1890, therefore, the Rand, single handed, is responsible for as much as the rest of the world put together—a remarkable record truly, and it is difficult at the moment to see from what source any falling off from the Rand is to be made good, for in the last few years there has been such a dearth of new heavy producers as to make the present outlook rather black. Some of the individual performances of the Rand mines have been splendid. The following figures, extracted from the Chamber of Mines' past records, and dealing with the dividends paid on the capitalisation of some of the most successful companies, speak for themselves:—Ferreira, 4415 per cent. dividend return on capital; Crown Reef, 2404 per cent.; Johannesburg Pioneer, 2107 per cent.; Wemmer, 1237 per cent.; Meyer and Charlton, 1105 per cent.; Durban Roodepoort, 1100 per cent.

As evidence of the magnitude of the operations of some of the companies, the following is interesting:—

	Issued capital.	Tons crushed.	Gross production.	Value per ton.	Dividends distributed.
Robinson	£2,750,000	5,971,075	£17,378,969	58/3	£9,574.688
Village M.R. .	472,000	5,475,566	11,271,376	41/2	2,911,913
Crown Mines .	940,106	15,908,724	29,510,128	37/2	3,807,428
East Rand Prop. .	2,445.897	14,097,016	23,157,114	32/10	3,655,128
Geldenhuis Deep .	585,753	10,177,511	16,842,039	33/1	1,969,853
Randfontein Cent.	4,193,700	10,956,484	15,687,985	28/8	209,685
Simmer and Jack .	3,000,000	8,681,486	13,122,964	30/3	4,566,461
Meyer and Charl. .	200.000	2,132,701	4,026,446	37/9	1,155,308

Note: These are only some of the best; there are many others.

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(*To be continued.*)

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A BARBERTON RESUSCITATION.

Details of the New Sheba Queen Gold Mining Co. Flotation.

With a capital of £12,500, in fifty thousand shares of five shillings sterling each, of which forty thousand (40,000) are now offered for subscription at par, the New Sheba Queen Gold Mining Company, Ltd., is to be floated under Rand auspices. The provisional directors are Messrs. Lewis A. Stewart, J. E. R. Adendorff, F.C.S., and S. F. de Villiers. The objects of the company are (1) to acquire from the vendor (a) the lease dated 6th August, 1913, granted by the Government to the vendor of the Sheba Queen property, Steynsdorp, in extent 64 morgen; (b) certain moveable assets, buildings, stock, plant, tools, and ore dump, now standing or lying on the said property, as set forth in Clause 3 (a) of the lease hereinafter mentioned and enumerated in an inventory signed by the vendor and lodged in the office of the company; (2) to carry on the work of prospecting for gold mining, milling, gold ores, getting and mining gold and the various occupations ancillary thereto.

The prospectus explains, *inter alia*, that the Sheba Queen property is situated on the farm Hooggenoeg No. 12, on the banks of the Komati River, about seven miles from Steysdorp and twenty-five miles from Barberton. The area of the ground which is held under lease, direct from the Government, is 64 morgen 342,589 roods, equal to 96 claims or thereabout. The rent payable is (1) the ordinary claim licences at 2s. 6d. per claim per month, and (2) 15 per cent. (fifteen per cent.) profit tax. The term is perpetual, subject to the right of the Government to terminate the lease whenever the mine is worked out. The lease contains various provisions as to the proving and floating of the property. Persons desirous of becoming subscribers are invited to examine the lease which is lying for inspection at the office of the company. There are one or two reefs on the claims, but only one has been developed. Upon this a considerable amount of mining has been done. The reef has been opened out to a depth of 250 feet. Adits and shafts have been driven and sunk and connected upon the first and second levels. Below the second level two winzes have been put down. Altogether some 1,500 feet of mining work has been done. The mine may be said to be divided into two portions by an almost vertical dyke. Upon the western side of this dyke the values average low, probably not exceeding an average of 5 dwts., although in places, and even in the dyke itself, values of several ounces are occasionally found. The central section of the mine is on a shoot of higher values. According to the report of Mr. W. Shanks, the well-known mining engineer, dated 1903, there were then some 7,000 tons of ore developed of an average value of 30 dwts. (say £6) per ton. Further development has been done since. There are also lying at grass about 1,000 tons of high grade ore. The outcrop of this reef has been traced beyond the mine along the whole length of the property or about one mile; trenches have been cut at intervals, and, at a point some 1,000 feet west of the mine, a shaft has been put down to a depth of 60 feet, showing the reef of normal width and a value of 27 dwts. The average width of reef, which is a lenticular quartzitic body, may be said to be about 5 feet. The ore is refractory and not free milling. But, according to analysis, the extraction of the gold should not present metallurgical difficulties. A picked sample of 2 tons of ore was sent to London for testing. Professor Ramsay, the well-known metallurgical chemist, reported the following analysis: Gold, 5oz. 12dwt. 18grs.; platinum and rare metals, 10dwt. 6grs. After roasting, this ore showed an extraction by bromo cyanide of 93 per cent. Twenty-four hours' cyanide treatment without roasting gave an extraction of 58 per cent. from a portion of the sample treated by Messrs. Johnson & Sons, London, assaying 4oz. 10dwt. There is no battery or cyanide plant on the property. There is, however, an excellent manager's house, furnished men's quarters, assay office fully equipped, blacksmith's shop, native compound, pumping plant and engines, trucks, rails, and a large supply of steel and spare stores. These are of an estimated present value of £5,000. There is a battery, with excellent cyanide plant and full equipment standing on a property in the vicinity. This plant has recently shut down and could be re-started in a few days. It is proposed that the company shall hire this mill with the option of purchase. The suggestion of the vendor is that a quantity, say, 1,000 tons of ore, at present accessible, should be put through this mill as a preliminary. By this means the value of the ore will be demonstrated at small expense, and it is anticipated considerable profits will be obtained. These profits, after making allowance for high costs of dealing with this parcel of ore, may be estimated approximately as follows: Transport costs and mining costs (if any), milling and cyaniding at 30s. per ton, £1,500; allowing only for 60 per cent. extraction 1,000 tons; assay value 30dwt. 60 per cent. equals 900oz., £3,600—leaving an estimated profit of £2,100. If the company should not decide to hire this mill, it is estimated that a five-stamp battery with suction gas engine and cyanide plant can be erected for about £2,000. This plant would be used for the purpose of testing and demonstrating the value of the ore, but at the same time it is anticipated that the crushing will yield a good margin of profit.

THE TIN DEPOSITS OF EMBABAAN AND FORBES REEF IN SWAZILAND.*

Geology of Exceptionally Interesting Deposits Described.

By A. L. HALL, B.A. (Communicated by permission of The Hon. the Minister for Mines.)

The tin deposits of Swaziland are of exceptional interest to the geologist, since their mode of occurrence, notably that of Forbes Reef, presents certain novel features, unlike those usually met with among the better known South African deposits. Two main tin-bearing districts can be recognised in north-western Swaziland; the one consists entirely of alluvial occurrences and embraces Embabaan with the surrounding country, including the lower-lying district round McCreedy's Tins, some ten miles further south; in this belt of country the tin is associated with granite only. The other district lies on the eastern side of the Ingwenya Range, round Forbes Reef, and comprises occurrences associated both with granite and with schists.

TIN OCCURRENCES ROUND EMBABAAN.

Embabaan itself and the surrounding district for many miles is typical granite country, intersected by occasional dykes of comparatively recent age, with an average elevation of about 4,000 feet above sea-level. It is very well watered and deeply dissected, the prominent granite kopjes and ridges being separated by long conspicuous valleys. There is a close general resemblance to the type of country associated with the Woodbush Mountains on the eastern slopes of the Drakensberg, near Haenertsburg. Probably the granite of Embabaan belongs to the Older Granite formation of the eastern Transvaal. The very favourable hydrographic conditions, combined with the well-defined and vigorous drainage system, have much facilitated an effective concentration of the cassiterite and other heavy constituents of the granite along the numerous water-courses, of which the Babaan River is the most important. The name "Flats" is locally applied to those points, where the floor of the valleys widens out to form more extensive and fairly level ground, either along the main stream or at its junction with a tributary; it is on such "Flats" that some of the earliest tin-workings were carried out in a somewhat primitive manner, and are continued at the present time under more scientific conditions. Along the Babaan River itself are situated King's Flat, below the Residency, Ryan's Flat—practically in the village itself, and Babaan Flat, about half a mile further down stream. Besides these, a number of other alluvial deposits have been located along several streams further away, such as Stable Creek, on the Bremersdorp Road—some five miles from Ryan's Flat, and about 1,600 feet lower—and Sander's Creek, higher up among the hills of Embabaan. The various alluvial deposits present essentially the same geological conditions as regards mode of occurrence, though there are certain differences, as pointed out below, in the nature of the cassiterite and the character of the associated minerals. The workings on "King's Flat" may be taken as typical of the tin deposits at Embabaan, and the more extensive area over which sluicing operations have now been carried out, affords good opportunities for studying the geological relationships. Immediately below the surface there is a soft overburden of about 12 feet, consisting mainly of dark, almost black, humus, which carries little tin; though higher up the slopes, where it is much thinner, it carries more, since the gradual concentration is less effective the higher one rises above the floor of the valley, so that the deposit becomes more like an eluvial than alluvial occurrence. Below the overburden lie about 2½ feet of coarse tin-bearing gravel composed very largely of sub-angular quartz fragments up to three inches across; this gravel carries the bulk of the ore with its accessory heavy minerals and rests on the solid granite floor of the valley. Practically the whole of the tin recovered from King's Flat occurs in loose crystals of cassiterite, and no lodes or other tin-bearing deposits *in situ* are seen, but among the coarse gravel one finds occasional larger boulders with cassiterite still in position and with pegmatitic characters. The marked relief of the country and the good water-supply provide very favourable conditions for hydraulic sluicing and elevating. A fine water race, some 12 miles long, with a fall of 8 feet per mile, is led from the Black Umbolusi River along the slopes overlooking King's Flat, and supplies a giant monitor at a pressure of 40 lbs. per square inch. In this way both the overburden and coarse gravel are cut through down to bedrock and drained into a sump, whence the wash with its boulders of quartz and other fragments is raised by means of an elevator or gravel pump through a height of about 30 feet to the sluice boxes—where the cassiterite, together with all other heavy constituents, is deposited. These first concentrates contain from 40 to 50 per cent. cassiterite. They are further treated by a separate set of more steeply inclined sluice boxes, and, after grading and drying, pass through an electric separator, a highly ingenious contrivance which secures a most effective extraction of magnetic constituents. The final concentrates contain about 72 per cent. of metallic tin. The mode of occurrence and method of treatment of the ore in the other "Flats" are essentially similar to that described above, but there is considerable variation in the size of the cassiterite crystals At " Stable Creek ' the overburden attains a thickness of about 18 feet and rests on 6 to 24 inches of gravel; the tin ore is considerably finer than at King's Flat and also contains a larger percentage of magnetic iron. At " Sanders Creek " the workings are situated in a much narrower valley, and everything from the grass down to bedrock is washed directly into one drainage channel running along the floor of the creek. The tin occurs in much coarser lumps and has little magnetite associated with it, so that the first concentrates are further treated by means of a jig. The alluvial character of the deposit is clearly reflected in the *nature of the cassiterite,* which shows essentially the same features in the various workings. The black opaque crystals are without definite outlines, and rounded at the edges or otherwise roughened. In the workings situated, like Sanders Creek,(higher up among the hills and in narrower valleys the cassiterite occurs in larger lumps up to two inches across, while at King's Flat the ore is much finer in grain, approaching the consistency of finer sand at Stable Creek. Ruby tin is scarce. The Embabaan Tin belt is well known for the variety and abundance of *accessory minerals* accompanying the cassiterite. Enumerated in approximate order of abundance, these are: Monazite, iron ores, euxenite, corundum and tourmaline. Monazite occurs abundantly at King's Flat, but is much less common along the Hill creeks; it commonly forms badly-defined clove-brown crystals, averaging about a quarter of an inch across, though larger irregular individuals are occasionally found up to one and a half inches in length with poorly developed facets. Among the iron ores magnetite is very common, especially at King's Flat and Stable Creek, where the cassiterite occurs in much smaller crystals, while at Sanders Creek, where the tin-ore is very coarse, magnetite is scarce, so that some connection appears to exist between the fineness of the cassiterite and the abundance of iron-ore, partly due no doubt to the more effective concentration along the Babaan River. The mineral usually referred to as euxenite is fairly common at King's Flat, where it occurs in small irregular blackish crystals with badly developed faces, bluish-grey on the weathered surface, but on a fresh fracture almost black, with a sub-metallic or resinous lustre. The great majority of these are about a quarter of an inch across, but one also finds isolated larger lumps as much as one inch in diameter. The identity of this mineral with euxenite is very difficult to establish, but there is no doubt that it belongs to the aeschynite group, which comprises the four minerals aeschynite, polymignite, euxenite and polycrase, all these four minerals being complex niobates and titanates of the cerium metals, polymignite containing a notable amount of zirconium, while euxenite and polycrase contain uranium, so that in the absence of crystals with good facets a satisfactory determination is not possible.† Corundum occurs in fairly well-defined dark greyish-brown crystals up to one and a half inches in length and often exhibiting the familiar barrel shape, but larger crystals are occasionally found, as much as three inches across—especially at Sanders Creek. Although no definite lodes *in situ* are seen, there can be no reasonable doubt regarding the *source of the cassiterite.* The intimate association with granite and the occasional occurrence of cassiterite-bearing quartz point to the conclusion that the ore is derived from pegmatites belonging to the Older Granite formation. Moreover, below Inyonyan near the Bremersdorp road and still in the same granite country the cassiterite occurs *in situ* in undoubted pegmatite veins.

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*From the "Transactions of the Geological Society of South Africa.

TIN OCCURRENCES AT FORBES REEF.

Forbes Reef is situated some fourteen miles north of Embabaan, close to the western boundary of Swaziland, which here roughly coincides with the crest line of the Ingwenya Range, a long and conspicuous mountain ridge made up of quartzies and schists of igneous origin belonging to the Swaziland System. Along the crest line of this chain two very thick quartzites are clearly recognisable with a dip towards the east of about 60 degrees. The eastern slopes and the low-lying ground to the east are made up of a greatthickness of very soft talcose, chloritic and calcareous schists, conformable with the underlying quartzites. These schists are succeeded by granite which is continuous all the way from Embabaan to Forbes Reef. It is practically certain that at the latter locality the granite is intrusive in the schists, and the proof of this relationship will be fully given elsewhere, while there is little doubt that the tin is derived from the granitic magma. Within the belt of schists, which begins immediately west of the old Main Reef workings at Forbes Reef, cassiterite has been found in two forms, both as reef tin. In the one case the ore is found in a vein of igneous origin, in the other the cassiterite crystals are embedded in the schists themselves; these two modes of occurrence may be conveniently referred to as—(*a*) Tin in "granite" and (*b*) Tin in Schists. (*a*) *Tin in Granite.*—Within the schist zone and about one mile from the contact with the granite, a reef has been located and followed for a distance of about 100 yards, cutting obliquely across the strike of the schists. It is from two to three feet wide and at the surface very badly defined against the country rock, though in samples from the deeper workings a fresh contact can be observed. The reef itself consists almost entirely of fresh, white felspar with small irregular patches of dark greenish-grey chlorite, and contains crystals of brownish-black slightly resinous cassiterite in isolated scattered blobs up to the size of a florin, or in elongated streaks. It is in sharp contact with a dark greenish chloritic layer from two to six inches wide, which shades off into the soft schist of the country. The amount of cassiterite is small near the surface but appears to increase with the depth. There is little doubt of the igneous origin of this reef, and its mode of occurrence suggests a derivation from the intrusive granitic magma, possibly as a form of pegmatite, though its general characters are not quite like the usual granitic pegmatite. It may be pointed out that at various localities within the belt of schists and at the same horizon as the tin lode, tourmaline and staurolite are abundant. Isolated from the matrix, the crystals of cassiterite present very distinctive characters, since they are very badly defined and show highly irregular pitted surfaces, not unlike clinker. In this respect there is a striking difference as compared with the well-formed crystals of cassiterite belonging to the " Tin in Schist " mode of occurrence. (*b*) *Tin in Schist.*—Close to the above described occurrence of reef tin, but a little further into the belt of schists, there are several fissures running roughly parallel with the strike; along them—over a width of about three inches—the schist matter is tin-bearing, while very little or no tin is found away from the fissures. One of the latter is well seen in a long trench, which shows the country rock dipping to the west, and is traceable all along the trench. The fissure itself consists practically of the same material as the country, and appears merely as the well-defined outcrop of a plane of discontinuity in the body of the schists, though in places it becomes less clearly marked. In the adjoining creek sluicing operations have been carried out down to bed-rock, and the cassiterite thus obtained is clearly derived from the underlying schists by weathering and gradual concentration. Some of the fissures can be traced in the bed of the creek itself and at several points larger crystals of cassiterite occur *in situ* in the schists, not obviously connected with the distribution of the fissures. No quartz gravel occurs, but the overburden rests directly on the schists. The character of the ore in the schists differs markedly from that occurring in the granitic veins, the cassiterite forming very coarse crystals with good outlines, while ruby or resin tin is common. Unlike the Embabaan occurrences none of the characteristic accessory minerals are found at Forbes Reef. (c) *Probable mode of origin of the cassiterite at Forbes Reef.*—The above remarks show, that while at Embabaan the tin ore is wholly alluvial and probably derived from the tin-bearing pegmatites through disintegration and gradual concentration along the major drainage lines, the field-relationships of the Forbes Reef deposits, which are entirely reef tin, strongly suggest that they are genetically connected with the intrusion of the granite into the schists, during which tin-bearing granitic apophyses penetrated and also impregnated the latter, more especially along certain fissures, the formation of which may have been directly consequent upon the intrusion, and no doubt facilitated the circulation of mineralising agents. The occurrence of a well-defined band of greisen 2 to 3 feet in width in the granite at its contact with the schists near the Main Reef workings is not without significance in this connection. Compared with the familiar association of cassiterite with granite, such a mode of occurrence as Forbes Reef is unusual and suggests that the economic possibilities of beds of schists in close proximity to an intrusive granite deserve closer attention than they have commonly received.

Messina (Transvaal) Development.

The results of January operations at the Messina were as follows:—5,790 tons of ore were treated, producing 1,098·40 tons concentrate; average assay value, 41·8 per cent. copper. Smelter treated 207 tons of middling and produced 34 tons matte; average assay value, 56 per cent. copper. Total output of concentrate and matte, 1,132·40 tons; average, 42·2 per cent. copper. 754 tons of 9 per cent. copper middling were also produced. Total development footage, 134 ft. on 9th and 10th levels. Continued shortage of water restricted milling and shortage of coal due to the recent strike curtailed smelting operations.

Mining Examinations.

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible. E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Box 2061

SUNDAY MILLING ON THE WITWATERSRAND GOLD MINES.

Points from Report of Sunday Observance Commission.

The Sunday Observance Commission Report published this week has the following, *inter alia*:—

The application of any strict Sunday law to the Witwatersrand Gold Mining Industry is a matter involving great issues and complex technical and economic problems which affect not only a large human element, but also the material prosperity of the whole Union. It, therefore, calls for careful examination and matured judgment. Any drastic amendment of the existing law, which would in any way seriously interfere with the present stable position of so great and valuable an industry, can be put forward only after the various issues have been clearly enunciated and fairly met, and with a full sense of responsibility. We have received valuable evidence from the Chamber of Mines, representing the mine owners, and from the Witwatersrand Trades and Labour Council, the Federation of Trades Unions, the Transvaal Miners' Association, the Amalgamated Society of Engineers, and the Reduction Works Employees Society, all representing the workmen, as well as from a number of individuals, and from the Churches. The two principal points upon which a decision has to be arrived at are (1) the running of stamp batteries and reduction works; and (2) the carrying out of repairs and other necessary work. The first point is of by far the most consequence, and involves broad questions of principle and important results. The second turns chiefly upon the defining of what repairs and work are "necessary," and upon the best means of enforcing whatever provisions are laid down in the law. Upon the first point we have found on the Witwatersrand itself a sharp division of opinion, while upon the second all are agreed that such work is to some extent unavoidable, though differing somewhat as to its scope and as to the best method of enforcing the law. Here it may conveniently be stated that the work done on Sundays in stamp batteries and reduction work includes the operations of crushing in the stamp mill and the tube mill, if such are provided, treatment in the cyanide works and the periodical "clean up," or the collection of the gold amalgam.

The Running of Stamp Batteries and Reduction Works.—The Transvaal Chamber of Mines have urged upon us most strongly the desirability and even the necessity of carrying on this work on Sunday. They were supported in this by the representatives of the Victoria Falls Power Company, who pointed out that the cessation of Sunday work would result in loss to the suppliers of electric power. The various bodies representing the workmen were unanimous in opposing the running of batteries and reduction works on Sunday, except the representatives of the reduction works employees, who were divided, some of them stating that the employees were afraid that if they did not work on Sunday their pay would be reduced, and that the pay was already so low that if it were further reduced they would not be able to live. Apart from this, neither on the Witwatersrand nor anywhere else in South Africa, did one single witness come forward to support the contention of the Chamber of Mines. On the other hand, there was, at the Witwatersrand especially, a great deal of evidence from the general public, including all classes of society, in favour of the stopping of stamp batteries on Sunday. It may, therefore, be said that, as far as the Commission have been able to ascertain, public opinion, apart from the mine owners, is practically unanimous upon the subject. Nevertheless, in view of the technical details involved, and the great economic importance of the question, it is necessary to give the greatest possible attention and consideration to the arguments that have been advanced in favour of the practice. The Transvaal Chamber of Mines frankly state that the principle of making Sunday a day of rest is recognise in the legislation of most Christian countries, but they add that all countries have exemptions of various kinds, according to the circumstances of the country and the requirements of different industries. They plead for special consideration in the case of the gold industry on three main grounds, viz. :—(*a*) The nature of the industry; (*b*) the disproportionate loss that may be incurred by the mine owners and the whole community; and (*c*) the past action of the Government or Legislature. In regard to the first plea, it is stated that the gold industry is productive and not distributive; that productive industries suffer more from Sunday stoppage than distributive industries; and that from the point of view of the loss to public wealth, the case for the exemption of the gold industry is stronger, because the price of gold is fixed, and increased production to a practically unlimited extent can be disposed of at a fixed rate. Therefore, they contend, a limitation in gold production is pure loss to the community concerned. It was further stated that the Transvaal Government in the years 1896 to 1898 prohibited all mining work underground, but allowed continuous carrying on of the mechanical and chemical processes or reduction works on the surface, and that in so doing the Government was actuated by the reasons (*a*) that the work was mostly mechanical, involving a small amount of human labour compared with the underground work, and (*b*) that continuous processes were in question, the weekly break in which would cause loss of time and inconvenience, and that this is a recognised ground of exemption under the laws of other countries. The second main plea is, generally, that the stoppage of Sunday work would cut out one-seventh of the operating time, and where the reduction plant is no more than equal to the existing rock-producing capacity of the mine, the result would be a decrease of production. This loss would fall on shareholders and the community generally. A certain number of stamps were constantly hung up on the Witwatersrand, but the stamps hung up at one period were not the same as the stamps hung up at another period. Only mills and stamps hung up through shortage of ore would not suffer in production through Sunday stoppage. The number of employees released by stoppage of mills and reduction works on Sunday would be comparatively small, because a large proportion of the men would be required as guards; whereas the economic loss to shareholders and the country at large would be comparatively great. The Sunday stoppage would curtail production on many mines and throw a number of men out of employment. The The Chamber had no objection to employees in reduction works having some definite minimum period of cessation from work, but was not prepared to say whether this cessation should take place at short and regular intervals, or a long cessation at greater intervals. The third main plea is on the ground of past legislative action. After much discussion with the Government, what was termed a final settlement was arrived at in the years 1896-1898, which has remained without disturbance up to the present time. Under this settlement continuous operation of reduction plants was allowed, and mines were equipped on that basis. Apart from the economic loss, a serious alteration in the law would be regarded by investors all over the world as a grave infringement of vested interests. To reopen a settlement arrived at fifteen years ago would be arbitrary and unjust to those vested interests which have been acquired under that settlement, and would be injurious to the credit of the country. This official statement of the Chamber of Mines was supported by eminent technical and financial witnesses, and specific instances were given where it was contended that Sunday stoppage would operate harshly, and probably involve the closing down of mines at present working. Now, in dealing with the whole subject on general grounds, it will be at once realised that, accepting, for the sake of argument, all the statements put before us by the Chamber of Mines as being substantially correct, and admitting all their contentions, the great question still remains whether the moral and physical well-being of human beings should be subordinated to financial considerations. A heavy burden of proof is laid upon those who contend that the reply to this question should be in the affirmative. The consideration of the question whether Sunday labour in reduction works can be regarded as necessary has been greatly simplified by the Government Mining Engineer, who has officially laid down that the processes involved are not continuous. The only company which started milling since Act No. 12 of 1911 came into operation is the Consolidated Langlaagte. This company has been refused permission to run its reduction works on Sunday, and has been operating under that restriction for some time now most successfully. There, doubtless, are special considerations in the case of this company that do not apply to the older companies, and which will be considered in dealing with the second question we have raised, but the fact remains that in the judgment of the chief technical adviser to the Government, the processes are not continuous, as was previously accepted, and experience has demonstrated that this labour in reduction works is not what can be regarded as "necessary Sunday labour," in the sense that, apart from financial considerations, the operations could not be successfully carried on if a periodical stoppage on Sundays were enforced, or that the plant or the materials would suffer injury if work were not continuously kept up. The further question that occurs in this connection is whether the Sunday stoppage of reduction works of existing mines would entail such serious financial loss as to justify the present conditions. This is the crux of the matter as effecting the gold mining industry, and the point upon which most stress was laid. Apart from the consideration of morals or religion, the most important question from the public point of view is whether or not the stoppage of Sunday milling would result in a serious curtailment of the mining industry, such as the shutting down of a large number of mines, resulting in a corresponding diminution in the employment of labour. From a national standpoint, this question is obviously of greater importance than the diminution of profits, and deserves separate investigation. The actual shutting down of a large number of mines would undoubtedly be a disaster not to be risked save for the gravest reasons of public policy, and it is, therefore, necessary to go into the matter in a little more detail in order to ascertain what proportion of the total number of mines might be so seriously affected as to run the risk of having to close down. Taking the records for the first six months of 1911, which, at the time our inquiry proceeded, were the latest available, it appears that there were (*a*) four mines whose yield exceeded the working cost by less than 10 per cent.; and (*b*) four mines whose yield exceeded the working cost by more than 10 per cent. and less than 15 per cent. In group (*a*) the excess yield varied from 2.3 per cent. to 7.3 per cent. The tonnage milled by these four mines during the period mentioned amounted to 218,262, which is equal to only 1.9 per cent. of the total tonnage for the whole Witwatersrand during the same period. Two of these mines, the Champ d'Or and the Jubilee, have since ceased operating, so that the closing down of the remaining two, should it unfortunately occur as a result of the cessation of Sunday milling, would cause a diminution in the tonnage milled on the Rand of less than 1.5 per cent. In group (*b*) the excess yield varied from 10.6 per cent. to 13.7 per cent., and the tonnage milled was 437,350, or 3.8 per cent. of the total tonnage milled on the Rand. Of these, the Simmer East, accounting for 176,270 tons, has since ceased operations, so that the maximum effect of the cessation of Sunday milling upon this group would be to stop 2.25 per cent. of the total work. During the debate in Parliament which led to the appointment of this Commission it was stated by the Minister of Mines that the estimate which had been arrived at, both by the Mines Department and the Chamber of Mines, was that the output would be reduced by 14 per cent., and the working costs increased by 2½ per cent. We assume here that the maximum nett reduction of output would not exceed 15 per cent., though for the reasons stated below we consider that in the great majority of cases this loss would actually be very much less. It appears then that, taking even the high figure of 15 per cent. as the reduction caused to the industry by stopping Sunday milling, and that this could not be met or diminished by any expenditure of capital or improved method of working, the aggregate maximum number of stamps that would have to stop work would be under 4 per cent. of the total. We do not think that, from the public point of view, such a curtailment of the mining industry could be regarded as sufficiently serious to be allowed to stand in the way of reform. There remains the question of the possible curtailment of the shareholders' profits. The first important fact to be remembered is that the gold which is now produced on Sunday would not be irecoverably lost if Sunday work were prohibited. The gold remains, but its recovery is delayed, and the real loss is not represented by the amount of the diminution in weekly output, but by the interest on the dividends derived from gold recovered on Sundays together with the increase in cost of working owing to the continuance of the standing charges while production is at a standstill. This increase in cost of working, as already noted, is estimated at 2½ per cent. To meet this loss of interest and to maintain the present production, thus obviating at the same time any difference in the standing charges, the obvious solution is to increase the reduction plant by one-sixth. This solution, however, is complicated by the fact that mines, which are either altogether unpayable or just over the margin of payability low grade propositions, of which there are a considerable number on the Rand—would in certain cases be unable to raise the necessary additional capital to increase their plant, and would thus have to close down. There are two classes of mines, it is agreed, that would not be greatly affected in this regard, viz., mines which are at present milling one-sixth or more under their full capacity, and rich mines that would be able to put up the additional working capital to increase the necessary plant by one-sixth. The only mines which would require the additional working capital, and at the same time be unable to raise it, are those mines which are either unpayable or on the verge of unpayability. With these we have already dealt, showing that there is reason to believe that less than 4 per cent. come under this category. The exact proportion involved must necessarily be a matter of doubt, since all mining is more or less speculative, but our conclusions are to some extent backed up by the evidence of Mr. W. McCallum Cameron, Consulting Engineer, and one of the witnesses for the Chamber of Mines, who stated that only a few would be compelled to close down. The Lancaster West, which he gave as an instance, has closed down from other causes since evidence was taken. In the case of those mines which are on the verge of unpayability, the difficulty of raising the extra capital needed may, in some instances, be increased owing to their unfavourable position as to debenture issues or other existing liabilities. We have necessarily left this consideration out of account, as we have had no detailed evidence on the subject, nor were any figures laid before us by the Chamber of Mines. As to the remaining mines, whose margin of profit is 15 per cent, and over these are controlled by strong financial houses, and it is hard to imagine that the difficulty of raising the additional capital required would be allowed to determine the shutting down of the mine, more especially if one considers the enormous amount of capital already sunk in their equipment, both on the surface and underground, to which this extra cost would bear a very small proportion. We cannot think that concerns, where such huge capital expenditure has taken place, and where such profits are being made, will find themselves unable to raise the small additional proportion required, and one is entitled to presume that there will be few indeed, if any (provided that reasonable time is given to effect the change), which will be called upon to incur any enduring loss on this account. After giving the matter very careful consideration, we have come to the conclusion that, in order to provide for contingencies and to avoid any appearance or suspicion of inequitable treatment, the period within which Sunday milling should be required to cease should be fixed at three years; it being understood that the provisions now contained in Law No. 12 of 1911, with regard to new mines, should remain in force. If individual cases of hardship should arise, we think the number would be very small. On the other hand, it appears doubtful whether, in many cases, the mines would need to raise additional capital at all. It is common knowledge that one of the constant troubles of the mine manager's life from one end of the Reef to the other is the effort to keep his mill going It has been the custom to suppose that at all costs the mill must be kept running even where it might have been more profitable to mill a smaller quantity of higher-grade ore. Professor Lawn, one of the witnesses for the Chamber of Mines, admitted that the milling of even waste rock was not unknown, although he denied it was general. The strong temptation undoubtedly exists to mill waste rock, or at all events unpayable rock, in order to show low working costs per ton milled, although the yield per ton is thereby decreased. Evidence to this effect has been given before Mining Commissions in the Transvaal, and it must be taken that the practice prevails in some considerable measure. The necessary conclusion is that the mines are to some extent over-equipped with stamps, otherwise there would not be the constant cry for ore to keep the mills going. The working of the mills on six days instead of seven might, therefore, if the plant was not increased, raise working costs slightly, but would often result in better mining and improved profits. At any rate, the present inducement to mill anything, if only the mill can be kept going, would in such event either cease to exist, or be very greatly diminished. To many harrassed mine managers the stoppage of Sunday labour in reduction works would in this respect be an unmixed blessing and relief. The whole question is fraught with difficulty, but, for reasons stated, the Commission cannot see that the Chamber of Mines has justified its pleas for special consideration on the ground of the nature of the industry, or of the disproportionate loss that would ensue either to the community or to the mine owners. Coming to their third plea, "the past action of the Government or Legislature," the gold mining industry has unquestionably been the subject of exceptional treatment by former Legislatures. The witness for the Chamber of Mines contended that very grave reasons must be put forward to justify the modification of existing laws, more especially as the circumstances remained unchanged. The official pronouncement of the Government Mining Engineer, that the processes, for which special consideration was granted, are not continuous processes has, however, in our opinion, vitally affected the situation. That continuous processes are in question is the very ground which is put forward by the Chamber of Mines as one of the two reasons actuating the Transvaal Government in the years 1896 to 1898 in the granting of exemptions from the Sunday Law to reduction works. The other reason was the limited number of men involved,, but this no longer applies. The number of men affected has increased greatly since that time, and is now very considerable. It is common cause that past legislation has given the gold mining industry no immunity against alteration of the law. Numerous changes, involving very considerable financial outlays on the part of the mines, have been made since 1898, including provisions regarding ventilation, the laying of dust, compounds, change-houses, miners' phthisis, and the profits tax. We, therefore, see no sufficient justification in past legislation for the exemption of reduction works on gold mining properties from the operation of the Sunday Law.

The Mali Dyke Gold Mine, which has up to recently been known as the South East African G.M. Co., will in future be carried on under the aegis of the Anglo-German Exploration Co., Ltd.

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THE JANUARY OUTPUT IN DETAIL.

Salient Statistics for the Month.

THE following are the salient figures of the January output:

Total output	651,753 ozs.
Value	£2,768,470
Decrease	21,062 ozs.
Value	£89,468
Witwatersrand	621,902 ozs.
Value	£2,641,670
Decrease	20,881 ozs.
Value	£88,713
Outside Districts	29,851 ozs.
Value	£126,800
Decrease	178 ozs.
Value	£755
Total Stamps	9,580
Decrease	142
Witwatersrand	9,035
Decrease	135
Outside Districts	545
Decrease	7

THE LABOUR POSITION.

The figures for the past three months of the numbers employed by members of the W.N.L.A. at the last day of each month read:—

	November.	December.	January.
Gold mines	147,569	150,012	154,202
Coal mines	9,286	9,516	9,471
Diamond mines ...	12,680	11,811	11,979
Totals	169,535	171,339	175,652

TWELVE LEADING COMPANIES.

The twelve leading producers are as follows:—

	Stamps.	Tubes	Tons.	Value.
Crown Mines	660	24	167,000	£249,852
Randfontein Central ...	850	29	166,306	201,007
East Rand Proprietary	820	25	123,500	190,511
Ferreira Deep	230	6	49,660	113,325
Robinson	250	6	53,500	99,210
New Modder	180	7	39,000	77,470
Simmer and Jack ...	320	7	66,800	73,800
City Deep	150	8	36,000	71,239
Rose Deep	300	7	62,400	68,656
Village Main Reef ...	220	5	32,050	65,993
Brakpan Mines	140	8	46,220	65,373
Geldenhuis Deep ...	300	7	43,700	64,540

INCREASES AND DECREASES.

The following returns of the January output have been filed with the Chamber of Mines. Increases and decreases compared with December are appended:—

The Witwatersrand.

	Dec.	Jan.	Increase.	Decrease.
	£	£	£	£
Aurora West	18,647	15,041	—	3,606
Bantjes	27,334	27,166	—	170
Brakpan	65,666	65,373	—	293
City Deep	73,664	71,239	—	2,425
City and Suburban	46,950	45,285	—	1,665
Con. Langlaagte	56,567	51,754	—	4,813
Con. Main Reef	30,393	26,514	—	3,879
Crown Mines	237,941	249,852	11,911	-
Durban Deep	30,352	31,340	807	—
Durban Roodepoort	15,147	15,101	—	46
E.R.P.M.	212,106	190,511	—	21,595
Ferreira Deep	99,010	113,325	14,315	—
Geduld	30,308	28,991	—	1,317
Geldenhuis Deep	63,601	64,540	939	--
Ginsberg	18,363	17,959	—	404
Glencairn	14,663	14,863	200	-
Knight Central	25,019	29,432	2,413	--
Knights Deep	66,413	60,704	—	5,709
Langlaagte Estate	58,682	56,631	—	2,051
Luipaardsvlei Estate	18,410	16,337	—	2,073
May Consolidated	9,774	8,963	--	1,011
Main Reef West	25,117	25,894	777	—
Meyer and Charlton	35,549	44,474	8,925	—
Modder B	57,026	58,232	1,206	—
New Goch	29,866	31,816	1,950	—
New Heriot	9,460	21,298	11,838	—
New Kleinfontein	64,090	54,736	-	9,354
New Modder	77,555	77,470	-	85
New Primrose	32,157	28,315	—	3,836
New Rietfontein	13,041	13,631	590	--
New Unified	15,985	14,956	—	829
Nourse Mines	60,067	60,798	731	—
Princess	28,264	27,891	—	373
Randfontein Central	223,367	201,009	—	22,360
Robinson Deep	74,042	62,985	—	11,057
Robinson	94,397	99,210	4,813	—
Rose Deep	75,975	68,656	—	7,319
Roodepoort United	21,850	22,203	353	—
Simmer and Jack	73,112	73,800	688	—
Simmer Deep	44,831	40,698	—	4,133
Spes Bona	4,519	4,596	77	—
Van Ryn	52,697	39,912	—	12,785
Van Ryn Deep	62,017	50,455	—	11,562
Village Deep	62,735	63,707	972	—
Village Main	69,731	65,993	—	3,738
Vogel Estate	13,622	12,981	—	641
West Rand Central	3,963	3,305	—	658
West Rand Consolidated	26,523	20,661	—	5,862
Witwatersrand	48,785	46,989	—	1,996
Witwatersrand Deep	63,555	61,167	-	2,388
Wolhuter	40,141	37,142	—	2,999
Miscellaneous	7,359	8,173	814	—

Outside Districts.

	Dec.	Jan.	Increase.	Decrease.
Ceylon	892	922	30	—
Glynn's Lydenburg	8,873	8,852	—	21
Nigel	19,578	19,935	357	—
Quest	2,948	2,931	-	17
Sheba	14,238	13,066	—	1,172
Sub-Nigel	11,367	10,959	—	408
Transvaal G.M. Estates ...	38,584	39,819	1,235	—
Worcester	4,294	3,589	—	705
Miscellaneous	25,678	26,727	1,049	—

THE OUTPUT IN DETAIL.

The following is our usual monthly table:—

The Witwatersrand.

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Aurora West	13,245	80	—	3,541	15,041
Bantjes Consolidated	22,400	100	3	6,395	27,164
Brakpan Mines	46,220	140	8	15,390	65,373
City Deep	36,000	150	8	16,771	71,239
City and Suburban	24,400	150	2	10,661	45,285
Consolidated Langlaagte Mines	38,100	70	7	12,184	51,754
Consolidated Main Reef	16,720	80	3	6,242	26,514
Crown Mines	167,000	660	24	58,820	249,852
Durban Roodepoort	13,824	90	1	3,555	15,101
Durban Roodepoort Deep ..	21,880	100	3	7,378	31,340
East Rand Proprietary Mines	123,500	820	25	44,850	190,511
Ferreira Deep	49,660	230	6	26,679	113,325
Geldenhuis Deep .	43,700	300	7	15,194	64,540
Ginsberg	14,715	75	1	4,228	17,959
Glencairn Main Reef	19,936	155		3,499	14,863
Geduld Prop. Mines	17,000	60	5	6,825	28,991
Knights Deep	86,300	400	11	14,291	60,701
Knight Central	24,200	100	3	6,458	27,432
Langlaagte Estate	47,006	200	5	13,332	56,631
Luipaardsvlei Estate .. .	15,150	60	3	3,846	16,337
Main Reef West . . .	17,290	80	3	6,096	25,894
May Consolidated	10,500	100	—	2,063	8,763
Meyer and Charlton	14,978	73	2	10,470	44,474
Modderfontein B .. .	30,200	80	5	13,709	58,232
New Goch	28,000	120	4	7,490	31,816
New Heriot	9,200	70	1	5,014	21,298
New Kleinfontein .. .	39,800	200	4	12,886	54,736
New Modderfontein	39,000	180	7	18,238	77,470
New Primrose	24,000	155	2	6,666	28,315
New Rietfontein Estate .	13,700	110	—	3,209	13,631
New Unified	12,810	60	1	3,521	14,956
Nourse Mines	41,000	260	7	14,313	60,798
Princess Estate	21,700	60	5	6,566	27,891
Robinson	53,500	250	6	23,356	99,210
Robinson Deep	46,520	105	8	14,828	62,985
Randfontein Central	166,306	830	29	47,321	201,007
Roodepoort United M. Reef ...	23,035	50	3	5,227	22,203

Company.	Tons Milled.	No. of Stamps.	Tube Mills.	Total Gold obtained. Fine Ozs.	Total value.
Rose Deep	62,400	300	7	16,163	68,656
Simmer Deep	57,500	180	9	9,581	40,698
Simmer and Jack	66,800	320	7	17,374	73,800
Spes Bona Tribute	5,414	40	—	1,082	4,596
Van Ryn Deep	30,340	65	7	11,878	50,455
Van Ryn Gold Mines	30,650	135	6	9,396	39,912
Village Deep	42,000	180	7	14,998	63,707
Village Main Reef	32,050	220	5	15,536	65,993
Vogelstruis Estates	12,070	70	—	3,056	12,981
West Rand Central	1,814	20	1	778	3,305
West Rand Consolidated ..	16,550	100	4	4,864	20,661
Witwatersrand	39,680	200	4	11,015	46,789
Witwatersrand Deep	44,560	245	4	14,400	61,167
Wolhuter	28,300	120	4	8,744	37,142
Miscellaneous Producers	—	—	—	—	8,173
Outside Districts.					
Heidelberg—					
Nigel	13,300	75	1	4,693	19,935
Sub Nigel	5,170	25	1	2,580	10,959
Barberton—					
Sheba	5,870	55	—	3,076	13,066
Worcester Exploration	4,200	40	2	845	3,589
Lydenburg—					
Ceylon Lydenburg	639	5	—	217	922
Glynn's Lydenburg	3,877	20	1	2,084	8,852
Transvaal Gold Mining Estate	14,550	75	3	9,375	39,819
Klerksdorp—					
Quest	3,997	35	—	690	2,931
Miscellaneous Producers ...	—	215	—	—	26,727

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of January, 1914, of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit.
Simmer and Jack ...	320	7	66,800	16,799	£33,077
Robinson Deep... ...	105	8	46,580	15,221	27,004
Knights Deep	400	11	86,300	14,962	14,733
Simmer Deep	180	9	57,500	9,581	2,821
Sub Nigel	25	1	5,170	2,380	2,896
Totals	1,030	36	262,350	58,943	£80,531

Total gold in reserve:—Simmer and Jack, 3,750 ozs.; Robinson Deep, 2,357 ozs.; Knights Deep, nil; Simmer Deep, 1,275 ozs.; Sub Nigel, 900 ozs.

The sundry revenue included in the above total declared profits is as under:—Simmer and Jack, £2,500; Robinson Deep, £1,435; Knights Deep, £1,470; Simmer Deep, £699; Sub Nigel, £796; total, £6,900.

Neumann Group.

The following are particulars of the results achieved by the crushing companies of this group during last month, viz.:—

	TONS.	YIELD.	PROFIT.
Witwatersrand Deep	44,560	£60,428	£25,735
Wolhuter	28,300	36,712	10,617
Consolidated Main Reef...	16,720	26,092	6,599
Main Reef West	17,290	25,492	5,911
Knight Central	24,200	27,067	4,739
Total for Group... ...		£175,791	£53,601

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Rand Mines Group.

The following are the results of crushing operations of subsidiary companies for the month of January:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Rose Deep	300	7	62,400	17/ 5	16,163	£13,401
Geldenhuis Deep .	300	7	43,700	24/11	15,194	9,170
Nourse Mines	260	7	41,000	21/10	14,313	15,255
Ferreira Deep ...	230	7	49,660	18/ 8	26,679	65,729
Crown Mines. ...	660	26	167,000	15/ 5	58,820	118,476
Durban Rood. D.	100	3	21,880	25/ 4	7,378	3,182
Totals and Avgs.	1,850	57	385,640	18/ 6	138,547	£225,213

Rose Deep, Ltd.—Decrease in profits due to disorganisation of work caused by strike.

Ferreira Deep, Ltd.—The number of stamps working for the month was 230. Results abnormal owing to close clean-up during the month of mill and cyanide works on account of the strike.

The following are the results of crushing operations of subsidiary companies for the month of January:—

Company.	No. of Stamps	Tube Mills.	Tons crushed.	Estimated Working Costs per Ton.	Total Fine Ozs.	Total Estimated Profit.
Modder B.	80	5	30,200	16/ 5	13,709	£32,804
New Modder	180	7	39,000	16/ 3	18,238	44,977
City Deep	150	9	36,000	25/11	16,771	23,471
Village Deep... ...	180	7	42,000	22/ 2	14,998	16,334
Village Main R....	220	6	32,050	18/ 6	15,536	35,334
Robinson	250	6	53,500	14/ 4	23,356	59,564
Bantjes	100	3	22,400	22/ 4	6,395	1,768
Totals and Avgs.	1,160	43	255,150	19/ 0	109,003	£214,252

Robinson Gold Mining Co., Ltd.—Results abnormal owing to close clean-up during the month of mill and cyanide works on account of strike.

The Albu Group.

The following are the details of results regarding the January operations of the producing mines of the General Mining and Finance Corporation Group:—

Company.	Stamps.	Tons Crushed	Total Cost.
Aurora West...	80	13,245	£13,444
Meyer and Charlton	75	14,978	14,074
New Goch	120	28,000	23,810
Roodepoort United	50	23,085	22,346
Van Ryn	135	30,650	28,943
West Rand Consolidated ...	100	16,550	22,221
	560	126,508	£124,838

Company.	Cost per Ton.	Total Revenue.	Profit.
Aurora West...	20/ 3.6	£15,071	£1,627
Meyer and Charlton	18/ 9.5	36,852	22,778
*Meyer and Charlton	—	7,648	7,648
New Goch	17/ 0.1	31,817	8,007
Roodepoort United	19/ 4.3	22,358	12
Van Ryn...	18/10.6	40,190	11,247
West Rand Consolidated ...	26/10.2	20,795	loss 1,426
		£174,731	£51,319
			Less loss 1,426
Net profit...			£49,893

*From special clean-up of cyanide works.

The milling operations of all the companies, with the exception of the Meyer and Charlton and New Goch were adversely affected by the strike.

Goerz Group.

Results of operations of the crushing mines comprising the Goerz group for the month of January, 1914:—

	Stamps.	Tube Mills.	Tons Crushed.	Total Value of Output.	Total Profit.
May Consolidated.. ...	100	—	10,500	£8,743	£266
Princess Estate	60	5	21,700	27,824	1,888
Geduld Proprietary ...	60	5	17,000	28,921	6,839
	220	10	49,200	£65,488	£8,993

Barnato Group.

The following are the operations of the Barnato Group for the month of January:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold.	Gross Profit including sundry Revenue.
Cons. Langlaagte ...	70	38,100	£51,756	£20,757
Ginsberg	75	14,715	17,960	4,191
Glencairn	155	19,936	14,861	2,294
New Primrose	155	24,000	28,316	13,006
New Rietfontein	110	13,700	13,631	91
New Unified	60	12,810	14,956	5,111
Quest	35	3,997	2,932	649
Van Ryn Deep	65	30,340	50,457	20,152
Witwatersrand	200	39,680	46,790	21,026
January totals .	925	197,278	241,659	£87,277
December totals .	995	206,453	264,326	£100,264

Brakpan Mines.

The following information in respect to the January, 1914, output has been supplied by the secretary:—Stamps working, 140; running time, 24 days; ore crushed, 46,220 tons; tube mills working, 8; ore hoisted, 52,286 tons; ore from dump, 2,160 tons; waste sorted, 12·54 per cent.; fine gold declared, 15,390 ozs.; value declared, £64,978, equal to 28s. 1d. per ton milled; working costs, £44,039, equal to 19s. per ton milled; working profit, £20,939, equal to 9s. 1d. per ton milled.

Piggs Peak.

The following is the result of operations for the month ended 31st January, 1914:—25 stamps ran 24·3 days; tube mills ran 26·4 days; crushed 2,405 tons; yielded 671 ozs. fine gold. Cyanide works treated 2,402 tons; yielded 274 ozs. fine gold. Concentrates shipped, 3 tons, containing 73·7 ozs. fine gold. Total recovery, 1,018·7 ozs. fine gold, valued at £4,318; working costs, £2,430. Estimated profit, £1,888, plus adjustment on previous realisations, £6; total profit, £1,894.

Zaaiplaats Tin.

The results for the month of January, 1914, are as follows:—Days run, 22·9 days; ore milled, 2,419 short tons; residues re-treated, 933 short tons; concentrates won, 80 long tons; average value of concentrates, 67·6 per cent. metallic tin; estimated profit for the month, excluding Government tax on profits, £3,796; adjustments in respect of estimated values of previous shipments, nil; profit declared for the month, £3,796; capital expenditure, nil. Owing to a serious shortage of native labour the management was unable to mine the usual quantity of ore and the output of concentrates is therefore much reduced. The labour supply has now considerably improved and it is hoped that normal conditions will prevail during February.

Victoria Falls Co. Issue.

The underwriters of the Victoria Falls Power Company's issue in London of £650,000 second mortgage debentures take 89 per cent. of the issue, which was quoted to-day at 2½ per cent. discount.

Rhodesian Section.

LATEST MINING NEWS.

Tati Concessions Debentures—The 1913 Output According to Districts—Wanderer Developments—The Radnor Claims—Globe and Phoenix Dividend.

A PROSPECTUS has been issued by the Tati Concessions Company, offering £100,000 of seven per cent. Debenture stock at the price of 97 per cent. It is set out therein that 394,125 £1 shares are in issue, and that the Debenture stock now offered can be converted up to January 1, 1919, into shares. The company's shares at the present moment are quoted at about 2s. 6d.—say, about £50,000 for the total in issue. The proceeds of the Debenture issue, it is stated, will be appropriated to pay off £73,666 13s. 4d. owed by the company to its bankers, provide the expenses of the issue, and leave working resources, with cash already held, of about £20,000, considered "sufficient for the Company's purposes." The trustees of the Debenture issue will, out of the proceeds of the Debentures, receive "the amount of the first year's interest." Having regard to the nature of the security and the application of the proceeds, we take leave to doubt if there will be any response on the part of the public. The directors are clearly dubious on the point, for it is set out that they "will not proceed to allotment unless there is, in their opinion, an adequate response to this issue."

* * * *

The value of the gold output from each district of Southern Rhodesia last year was as follows:—

	1912.	1913.	Increase or Decrease.
MATABELELAND.			
Bulawayo	£650,832	£780,928	+ £130,096
Gwelo	831,309	901,578	+ 70,269
	£1,482,141	£1,682,506	+ £200,365
MASHONALAND.			
Hartley	£637,391	£638,794	+ £1,403
Lomagundi	238,630	200,876	− 37,754
Mazoe	123,021	134,603	+ 11,582
Salisbury	32,663	29,937	− 2,726
Umtali	195,707	198,989	+ 79,282
Victoria	542	14,837	+ 14,395
	£1,227,954	£1,218,036	− £9,918

In the report of the consulting engineer of the Wanderer for November it is stated: The main drive on the adit level did not expose any profitable ore, although it was in the ore body; crosscutting east and west will shortly be commenced. Winze 22, which is now 59 ft. deep, and is sunk on the footwall side of the reef, has exposed ore above the average grade of the mine over the width of the winze. The 70 ft. level drive south has passed through the hard quartz bar, and an improvement in the assay values is recorded. On the 140 ft. level satisfactory progress was made in the main drive south. In the Kemerton and Ashton, the development calls for no comment; a small quantity of profitable ore was found in each of these mines.

* * * *

Cablegram.—Radnor Claims: Total footage driven and sunk for month is 82 ft. 200 ft. level: West drive off winze driven 5 ft., total 36 ft., assaying 1 oz. 10 dwts. per ton over 42 ins. 300 ft. level: Main west drive driven 19 ft., total 49 ft., assaying 1 oz. 11 dwts. per ton over 45 ins. East drive off south crosscut 16 ft. east driven 15 ft., total 15 ft., assaying 12 dwts. per ton over 47 ins. Winze below 300 ft. level has been sunk 20 ft., total 45 ft., assaying 1 oz. 2 dwts. per ton over 51 ins.

* * * *

The Globe and Phoenix third interim dividend of 1s. per share, less tax, in respect of the year 1913, was paid on the 12th inst. This compares with 1s. 9d. a year ago, but, in accordance with the policy announced by the chairman at the adjourned extraordinary general meeting held on October 27, the directors have decided, although there has been no diminution in the returns from the mine, to reduce the dividend to provide for capital expenditure and a cash reserve. This decision of the board is limited to the dividend now to be distributed.

Rezende Mines.

The results for the month of January, 1914, were as follows:—Estimated profit: Central Section, £1,707; Old West Workings and Penhalonga Sections, £692; total, £2,399.

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THE 1913 OUTPUT.

Returns of Individual Mines Examined—The Year's Results.

The grand total value of the mineral production of Southern Rhodesia up to the end of last year was just under twenty-seven millions sterling—to be exact £26,987,035. Of this amount gold has contributed by far and away the largest amount, £25,281,965. Next on the list comes coal with £681,648; and next chrome iron ore, £639,466. Silver accounts for £188,770, and lead £91,743. In regard to dividends Rhodesian mines and affiliated companies distributed £548,920. The total is practically the same as that for the year 1912, when £523,176 was distributed by gold mining companies, as compared with £566,520 in 1911. It has, of course, to be remembered, when considering the foregoing list of dividends, that no account is taken of the distributions made by numerous small local syndicates, or profits won by privately-owned and worked claims. These latter, it need hardly be said, aggregate to a very substantial sum. Turning to the 1913 outputs of individual mines, it is perhaps hardly necessary to remark that the Globe & Phoenix, in the Gwelo district of Matabeleland, comes first with a total of £516,116 as compared with £476,584 in 1912. Next on the list for Matabeleland is the Lonely—£219,134 (1913) and £158,841 (1912). The Bushtick, Matabele Queens, and Old Nic, all in the Bulawayo district, also show substantial increases. In discussing some of the outstanding features of last year's returns, the *Rhodesian Mining Review* remarks: The falling off in the Province of Mashonaland was only what might have been expected, having regard to the fact that there are situated most of the mines which temporarily ceased milling and which have for some time past been concentrating on development with a view to productive operations on an enlarged scale. In the Lomagundi district the considerable decrease in the output is entirely due to the Eldorado Mine, which decreased its yield by some £40,000 as compared with 1912. This course was forced upon the management in view of the unfavourable nature of the developments in the lower levels of the mine, where the shoot was found to have diminished so seriously in length and in value that a conservative or waiting policy was obviously the only prudent one to follow. It is all the more gratifying to learn that recent developments have been more favourable, though the Parallel Reef, on which so much reliance was placed in the former days of this wonderful property still continues to give no results in the bottom levels. It is interesting to note that, since the creation of the company, it has paid out in dividends more than 150 per cent. on an issued capital of £300,000. A turn of the wheel of fortune might add largely to the prospects of the mine, and would incidentally do a great deal to restore to the Rhodesian mining industry that confidence, which one is bound to admit, has been rudely shaken by the apparent failure, in so many cases, of the persistence in depth of the value-carrying ore-bodies. The Mazoe district will, at a very early date, of course, come into renewed prominence by reason of the commencement of milling operations on the great Shamva mine, where the treatment of some 50,000 tons of 5-dwt. ore per month will contribute to the placing of the district in the forefront of the list. Similarly, we can look forward to a comparatively early entry into the producing list of the Golden Kopje mine, in the Lomagundi district, while in the not far distant future the Planet-Arcturus group of properties will largely add to the yield from the Salisbury area. The falling off during the past year from the Mazoe area may be seen from a glance at the details which follow, to have been due very largely to the closing down of the Hay mine. This ill-starred concern contributed £27,873 to the output in 1912, but the latest reports from the engineers do not encourage the idea that anything further can be expected from the property. The Jumbo's yield also continues on the downward grade. In the Kimberley mine, however, a new producer of importance has been added to the list, 22,700 tons having been crushed for a yield of nearly £30,000. Making allowance for the fact that the property has only been running for seven months and that a return of about 8 dwts. per ton only was expected from it, this result can be considered satisfactory.

New S.A. Companies Registered in London

CHARSON, LIMITED.

This company was registered on the 2nd of January, with a capital of £250 in £1 shares, to carry on in South Africa or elsewhere the business of graziers, stock rearers, ostrich farmers, fruit growers, dealers in landed property, etc. Private company. The number of Directors is not to be less than two nor more than five; the first are Hon. G. G. Wilson, R. S. Charles, S. Brand, and H. J. S. Woodhouse (all permanent). Qualification, £1. Registered by Woodhouse and Davidson, 49, St. James's Street, S.W.

WAYGOOD LIFTS (SOUTH AFRICA), LIMITED.

This company was registered on the 10th of January, with a capital of £10,000, in £1 shares, to take over the business carried on by R. Waygood and Co., Limited, in South Africa, to carry on the business of manufacturers, constructors, and suppliers of and dealers in lifts, elevators, cranes, hoists, and lifting and hauling machinery, contractors, electricians, electrical, mechanical, hydraulic, and general engineers, etc. Private company. The number of Directors is not to be less than two nor more than seven. The first are Henry Claude Walker (Chairman), H. Harmsworth, D. W. R. Green, and Henry Cecil Walker. Registerel by Bristows, Coke and Carpmael, 1, Copthall Buildings, E.C.

A Mining Case.

In the Rand High Court this week, the case was begun of the Consolidated Langlaagte Mines, Ltd., v. Victoria Falls and Transvaal Power Company, Ltd.; Mr. J. Stratford, K.C. (with him Mr. R. MacWilliam) for applicants, and Mr. Ewald Esselen, K.C., (with him Mr. M. MacDonald) for respondents. This was an application for the amendment of a certain declaration. The affidavit by Mr. Webber (of the firm of Webber and Wentzel) stated that the action was one "in which the plaintiff claimed damages from the defendant for breach of contract by reason of the defendant's failure to supply to the plaintiff an additional supply of electric power within the stipulated time. The requisition for the said supply was made by the plaintiff on the 25th of February, 1911, and purported to be made under the terms of an agreement entered into between the defendant and the Johannesburg Consolidated Investment Company, Ltd., on the 1st of January, 1910. An amendment to plaintiff's declaration was necessitated by the fact that the defendant had raised the plea that the application for an additional supply of power on which the action was based must be considered in connection with certain other applications by the plaintiff for other additional supplies of electric power. Mr. Esselen agreed to the amendment of the declaration, and the only argument was on the question of costs. The claim in the action is for £42,104 for damages for alleged breach of contract.

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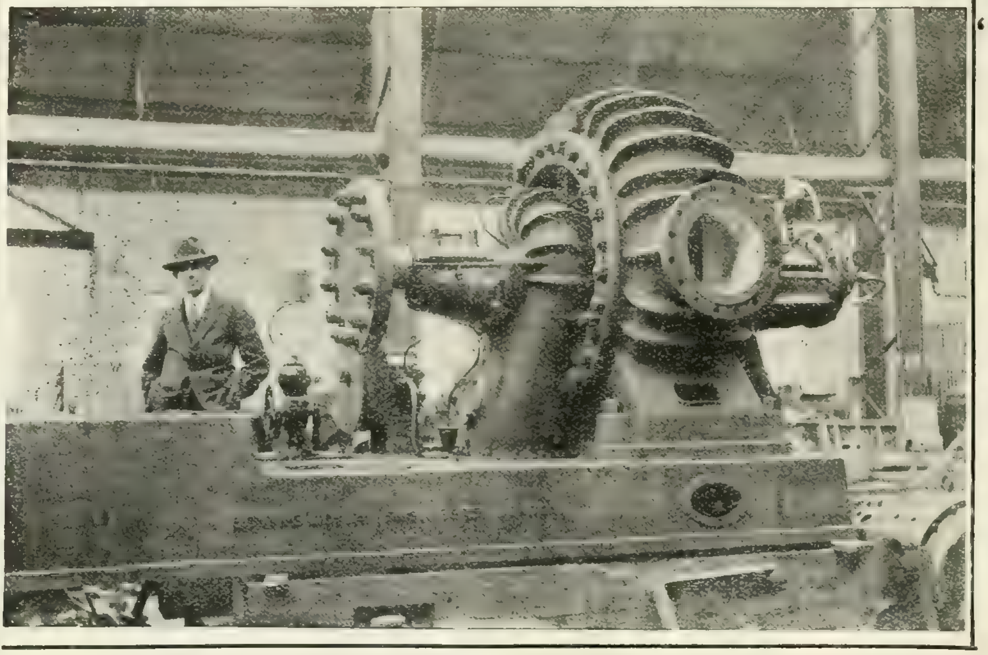

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Engineering Notes and News.

THE COMING INTERNATIONAL ENGINEERING CONGRESS.*

AMONG the important events now being planned for next year, the Engineering Congress which is to assemble in San Francisco, September 20, 1915, easily takes front rank. Held under the patronage of the five national societies, the American Society of Civil Engineers, American Institute of Mining Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, and the Society of Naval Architects and Marine Engineers, and with a total guarantee fund of 37,500 dollars, the Congress is already assured of success. Membership is open to anyone upon payment of a small fee, and it is hoped that the total enrollment will at least approximate 10,000. More than 70 engineering societies in America and abroad have signified their acceptance of the invitation to take part. While anyone may belong and may obtain such volumes of the proceedings as he may care to pay for, participation in the programme will be by invitation only. The Congress is under the management of a board consisting of 28 representatives of the five societies named. The president and secretary of each society is *ex officio* among the number, and the ten so selected constitute the "Committee on Participation" which has its headquarters in New York. It is through this committee that all invitations to take part in the Congress are issued, and it is to this committee that Colonel George W. Goethals has signified his acceptance of the presidency. The papers committee has been busy outlining a programme and tentatively making up lists of names as a basis for invitations to prepare the papers and discussions of the Congress. It is planned to publish the latter in ten full volumes and one half-volume, the latter to include the proceedings of the opening session and those papers that deal especially with the Panama Canal. Space in the other volumes is to be allotted so as to permit covering the widest possible range in engineering. It is proposed that they shall collectively constitute a virtual encyclopedia of present-day practice, so far as main outlines are concerned. It is desired that the papers shall be of the "Recent Progress and Present Status" type, and that instead of dealing in a restrictive way with particular problems or describing particular constructions, they shall summarise important lines of progress in each branch during the last decade and note the present practice and probable future trend.

METALLURGICAL PAPERS.

To mining and metallurgy a total of 750 pages has been allotted, though many closely related subjects will be discussed in the volumes devoted to civil, electrical, and mechanical engineering. With the active co-operation especially of T. T. Read, Bradley Stoughton, and C. W. Merrill, the following general outline for the metallurgical volume has been prepared. It is proposed that the volume shall constitute what may be termed a cross-section through the metallurgical industry in 1915. The larger topics will each be under the general supervision of a special editor who will have charge of collating and arranging the papers by individual authors. It is not intended to exclude the citation of special instances to illustrate the general treatment of a subject, but such citations should preferably consist of references to the bibliography of the subject which will serve to supply the reader with measurably full indication of the sources where important original papers may be found. In particular, it may be noted that within the extent of space available, it is not expected that the treatment can be to any marked degree detailed in character. It is desired rather that it shall be broad, comprehensive, and suggestive. The general subject will be considered under 11 heads with sub-topics indicated :—1. Iron and steel—Metallurgy of cast steel, including founding; manufacture of steel and wrought iron; properties, uses, and manufacture of alloy steels; metallography of iron and steel; corrosion of iron and steel. 2. Copper—Copper smelting practice; hydrometallurgy of copper; copper refining; copper alloys; physical properties and metallography of copper. 3. Cyanide practice—Preliminary crushing; re-grinding; solution of gold; filtration; precipitation. 4. Metallurgy of zinc and cadmium. 5. Lead smelting and refining. 6. Metallurgy of aluminium. 7. Minor metals—Nickel and cobalt, mercury, tin, arsenic, antimony, and others. 8. Metallography and technology of non-ferrous alloys. 9. Electrometallurgy—Iron and steel; aluminium; zinc; copper. 10. Utilisation of fuels—Pulverised coal; liquid; gaseous. 11. Ore dressing—Crushing and sorting; wet-concentration; magnetic work; flotation.

MINING ENGINEERING.

The volume on mining engineering has been planned with the special assistance of H. C. Hoover, F. W. Bradley, M. L. Requa, D. C. Jackling, and incidental help from other members of the Institute. In it a slightly different point of view has been adopted. It has been thought that the most serviceable volume that could be produced would be one in which should be summarised the best engineering practice as relates to distinctively mining problems. With this in view, it has been proposed to leave to the other sections of the Congress the handling of subjects that are only incidentally mining and to bring together a group of papers that would afford a concrete picture of mining methods in 1915. It is thought that best results will be obtained by collections of somewhat detailed descriptions and analyses of the different mining methods as exemplified by type examples and supplementing these by very brief bibliographies and carefully-planned discussion rather than by a general resume of the literature of each topic. The purpose is, as far as may be, to have each subject handled by a practicing engineer who has himself employed the method described. The following list of papers is proposed :—

PAPERS ON MINING METHODS.

1. Placer mining, including (a) the testing and valuing of placer ground; (b) hydraulicking (briefly); (c) dredging, the latter to be discussed in detail and to form the main part of the paper. In this and subsequent papers named, the object should be to describe the methods, efficiency, and limitations of the process. The recent use of dredges for stripping iron ores may well be taken up in the discussion of the main paper. 2. Steam-shovel mining: (a) the methods on flat lands with heavy cover, as in the Lake Superior iron district; (b) modified methods on steep slopes, as in the Western

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*By H. FOSTER BAIN, in the "Mining and Scientific Press."

copper mines, with consideration of the methods of preparing and blasting the ground; (c) substitution of drag line scrapers, as in the Cuban iron ore mines; (d) mill hole work. 3. Caving systems in mining: (a) methods as employed in the Lake Superior iron mines; (b) modified methods used in Western copper mines. 4. Method used at the De Beers diamond mine. This was developed from a coal mining method in wide use and shows relations both to caving and narrow stoping. 5. Stoping as used in the Lake Superior copper mines with great depths and low angles of dip. 6. Mining method on the Rand, as an example of stoping at great depth in persistent ore bodies and where large scale operations are possible. 7. The cross-stoping method in use at Broken Hill, New South Wales. 8. The rill and fill system at Kalgoorlie. 9. Methods of filling. These methods have been worked out especially in European coal mines and are beginning to be employed at Scranton, Cripple Creek, and other points in the United States. They must ultimately be used even more widely, and the topic is therefore especially important. 10. Underground transportation. These methods have been developed most largely in coal mines, and the metal miners have much to learn in this particular. Grades, curves, track, motive power, cars, signals, and dispatching are some of the sub-divisions to be considered. 11. Hoisting from depths, with Butte as the type example. Butte is chosen because of the fact that the engineers there have passed through the stage of direct steam, and in the district may be seen both electric hoisting and a peculiar method of using compressed air; a comparison and a study of limitations of these systems would be especially important. 12. Preparatory work and experimental mining and milling. Now that mines are worked upon such a scale that millions must be invested in preliminary work and in plant equipment, it becomes important to know what are the most economical methods and what the wise limits of expenditure. Test-pitting, drilling, underground exploration, sampling, estimating, testing, the building and operation of pilot-plants, should all receive attention. The ratio of preliminary expenditure to total investment is one to be carefully studied. 13. Underground costs and efficiencies. This should be a general paper treating the subject in a broad way, not a mere compilation of unrelated costs. So far as possible figures should be reduced to a basis of tons per man per shift, and the relative economy of different types of labour and of labour as against machines, studied in detail. 14. Oil production, with especial emphasis on oil-well drilling. This involves engineering of a high degree of skill where many conditions must always remain unknown. Oil is now an important part of the mineral output, significant from many points of view.

SUPPLEMENTARY MEETINGS.

In addition to the Engineering Congress proper, several similar meetings will be held about the same time. The Electrical Engineers plan a separate world's congress for the week preceding the Engineering Congress, and about the same time the American Association for the Advancement of Science, and its affiliated societies, will be meeting. In the week following the meeting of the engineers, an International Petroleum Congress is to be held, and at some convenient date the American Institute of Mining Engineers and the Mining and Metallurgical Society are also to meet. Following the meeting of the Sixth International Congress of Mining, Metallurgy, Applied Mechanics, and Practical Geology, which is to assemble in London in June under the auspices of the Institution of Mining and Metallurgy, an excursion through Canada is planned under the patronage of the Canadian Mining Institute with a visit to San Francisco and a return through the United States to be arranged by the engineers of the latter country.

A Fire-damp Whistle.

Two German professors have invented a whistle which indicates the presence of fire-damp in mines. Its principle is based on the fact that a sounding pipe gives notes of different pitch when it is blown first with air and then with other gases. The apparatus consists of two pipes, one of which is operated with pure air and the other with the air of the mine. A certain proportion of fire-damp in the air of the mine causes a trilling note to be sounded.

Oil Fuel.

Sir Boverton Redwood, President of the Junior Institute of Engineers, and Adviser on Petroleum to the Admiralty, the Home Office, and the India Office, delivered an address on "The Future of Oil Fuel," at a meeting of the Institution in mail week. In the course of his remarks he pointed out that although he was precluded from making any specific reference to the intentions of His Majesty's Government, which had recently been stated in Parliament, in regard to oil fuel, he had no doubt whatever that adequate supplies for Naval purposes could and would be obtained. To a large extent the immediate future of oil fuel depended on the evolution of the internal-combustion engine, and, as regarded the Mercantile Marine, on the measure of success attending the efforts to construct satisfactory engines of the Diesel type of large cylinder capacity. The United States Navy had definitely abandoned the use of coal in fighting ships design, and the President of the United States had set aside about 100 square miles of oil-producing land in California as Navy petroleum reserves. These reserves had an estimated capacity of 250 million barrels, and it was intended to hold this oil, in the ground, as an emergency supply, and as a precaution against sudden decline of oil production in the United States. Supplies in addition to those already existing might be obtained from a number of areas, including Canada, and to the list might be added, but with less confidence, New Zealand, New Brunswick, Newfoundland, and Barbados, and other localities. Increased quantities of oil fuel could also be obtained from Scottish shale, and very large quantities from the far more extensive deposits of similar shale which occurred elsewhere. The relative efficiency of oil and good steam coal from the Naval standpoint of fuel supply in warships might be regarded as in the ratio of 18 to 10. It was in the provision of power in ships that the superiority of the oil engine over the steam engine was most marked, for, apart from the economy, there were great advantages in the saving of space, the distance which could be covered without replenishing the fuel supply, the reduction in labour, and the facility with which the oil could be taken on board, while the engine could be started without previous preparation, and the consumption of fuel quickly arrested. The future of oil fuel depended not only on the extent to which it was reasonable to assume that the output could be increased but largely on the manner in which the fuel was used, for, with present knowledge, it would be wrong to suggest that the supply could ever become so abundant as to give consumers in general a free choice in substituting oil for coal as a source of power for industrial purposes. As some of the older oil-fields were showing signs of exhaustion, it was evident, notwithstanding rapid developments elsewhere, that very considerable expenditure of capital would be required to increase greatly the average rate of expansion of the petroleum industry. Doubtless there would be a continuous and large increase in the requirements of the navies of the world, and as this demand was not primarily governed by price, it might be described as irresistibly preferential in character, taking precedence therefore over all industrial needs. Except as regarded the belligerent navies of the world, in respect of which the dominant factor was efficiency, any increased use of oil as a source of power must evidently depend on the price at which the fuel could be obtained. In the use of oil for steam-raising and in other industrial operations the consumer could afford to pay about twice as much for oil as for coal, but if the market value of oil fuel became established on the Diesel engine basis, only those who occupied exceptionally favourable geographical positions in respect to sources of supply could hope to employ that description of fuel in steam-raising. In conclusion, he pleaded for economy in the production and use of petroleum.

New Patents.

9. Thomas Harrison and Daniel Corlett.—A new type of boiler.
10. Richard Rice Vesey Jeffreys.—Improvements in and relating to stamp mills.
11. Richard Rabbich.—A new and improved brake for railway train and other vehicles and the like.
12. Thomas Faichney Davidson.—Improved method and apparatus for grading oranges.
13. Thomas Matthews.—A new process for obtaining pulsation by means of liquid or fluid pressure and without the aid of plungers.
14. Enoch Kenyon.—Improvements in the final dressing of tin and other ores and means therefor.
15. Guglielmo Marconi and Marconi's Wireless Telegraph Company, Ltd.—Improvements in transmitting apparatss for use in wireless telegraphy and telephony.
16. Guglielmo Marconi and Marconi's Wireless Telegraph Company, Ltd.—Improvements in transmitting apparatus for use in wireless telegraphy and telephony.
17. Gustaf Andersson.—Improvements in pneumatic hammers and rock drilling machines.
18. Ernst Hfalmar Lagarstrom.—Improvements in rock drilling machines operated by compressed air or the like.

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Finance, Commerce, and Industries.

Johannesburg Municipal Estimates.

The revised Johannesburg Municipal Estimates for the year ending June 30 next place the ordinary expenditure of the Council at £696,712, to which has to be added capital and extraordinary expenditure amounting to £46,180—a total of £742,892. Against this, the revenue for the year is estimated to produce £733,446. The shortfall of revenue, therefore, for which provision has to be made is £9,446. On the revenue side of the account, the revised estimates show an increase in the yield from assessment rates of £3,723, and from interest on deposits an additional £500. In the trading departments the revenue from gas is estimated to produce £750 more than the original estimate. The Electric Department shows an increase of £1,000, and the growing popularity of the new market is responsible for £331, as against an original estimate of nil. On the other hand, the estimated revenue from the trams is reduced by £3,000 (£32,000 to £29,000), and that from water by £7,021. In the services controlled by the Parks and Estates Committee, Cemetery fees are estimated to yield £500 less than the original estimate, while Klipspruit Location fees show an estimated increase of £650. Sanitary fees show a drop of £5,000, the revised estimate being £134,550, as against the original estimate of £139,550. This loss is partly compensated for by an expected increase from sewerage fees of £1,000. The arrest in the building trade is indicated by a fall of £800 in Building Surveyors' fees—from £6,870 to £6,070. The participation of the Provincial Council in the fees derivable from vehicle and drivers' licences impelled the Council to budget for a decrease of £2,250 from this source, as compared with the original estimate of £27,615. The revised Estimates of Expenditure show a saving under loan charges of £17,188, and of £1,147 in the Stores Department.

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Sugar Crop for 1913.

According to Messrs. Millet & Gray, the cane crop (estimated on October 31) is expected to produce 9,911,800 tons in the 1913-14 season, which compares with 9,211,755 tons actually produced in the 1912-13 season. The beet crop of Europe is expected to yield 8,415,000 tons, and that of the United States 640,000 tons. Taken together the cane and beet crops of this the 1913-14 season are expected to produce 18,966,800 tons of sugar, or an increase of 820,981 tons. This increased production is, however, not regarded with any alarm by those interested in the sugar industry, for the consumption of sugar has increased, in recent years, to a remarkable extent. During the twelve months ended August 31, 1913, the consumption in Germany increased, according to one of the publications in the sugar interest, by more than 195,000 tons, in Austria by nearly 95,000 tons, in France by 59,000 tons, and in the United Kingdom by 168,000 tons. Those interested in the trade in South Africa affirm that the consumption has increased here also to an equally proportionate extent, and it is repeatedly stated that the natives are cultivating a taste for sugar which in the near future will require greater expansion than is at present evident to overtake the increase in the consumption. A few years ago the South African demand was estimated at 100,000 tons, but to-day it is believed the requirements are not far short of 130,000 tons. This year Natal is expected to produce 95,000 tons. Mozambique will probably yield 60,000 tons (this is an exaggeration), and Mauritius 230,000 tons. The surplus for export from Reunion is put down at 40,000 tons, whilst the Egyptian crop (58,000 tons) is not more than is required for its own consumption.

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Purchase of Government Supplies.

The Johannesburg Chamber of Commerce has made another appeal to the Prime Minister to do away with the system of purchasing Government supplies through the High Commissioner's office in London. In the course of its statement, the Chamber says:—" The Chamber considers that the best interests of the country would be served if the commercial department of the High Commissioner's office were abolished so far as the purchasing of requirements and placing of orders is concerned—but it recognises that arrangements for the inspection of material should be retained. As to the effects of such a change, I am to point out that if the Government obtains its supplies through South African merchants the very keen competition which exists here would, without doubt, ensure prices being quoted which would compare favourably with any quotations which the High Commissioner's office would obtain, when allowance is made for the saving of present expenses in connection therewith. Merchants and agents here are prepared to supply from stocks or to indent for all requirements; and to be held responsible, right up to the time of delivery, for goods being of the specified quality and description, as well as for the fulfilment of specifications. The Government would have responsible persons on the spot on whom they could place the onus of any delays or defaults that might arise. It is contended that some charges now paid could thus be saved to the Government, and it is evident that any trade profits and necessary expenditure in connection with contracts would then be circulated in this country, and the benefit would accrue to the general community."

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Chamber of Commerce and Economic Commission.

The Johannesburg Chamber of Commerce in its monthly report states that in regard to the Economic Commission's invitation to the Chamber to express its views on the terms of reference, the committee found that the Commission considered it necessary to present its report at a very early date and practically to confine the scope of the inquiry to present industrial conditions, apparently without due investigation of the fiscal and economic factors responsible for present living conditions. The committee expressed regret at the limitation of the scope of the inquiry, inasmuch as this would tend to minimise the benefits which might otherwise have accrued to the community in the direction of a readjustment of economic conditions, by relieving the consumer of burdens consequent on indirect taxation and by placing the taxation of the Union on a more equitable basis—thus establishing conditions favourable to the development of the trade and industries of South Africa on a sound and permanent foundation. The committee, however, asked the Commission to place on record the Chamber's protest against the unfair incidence of the existing railway and Customs tariffs—believing, as it does, that these are largely responsible for the unduly high cost of living on the Witwatersrand, which of necessity must restrict commercial and industrial operations, and thus check the development of the inland Provinces. Information was supplied the Commission as to the representations which the Chamber had previously made in this connection.

Sheba G.M. Co.

The secretaries write: We have received the following cable from our London office: " Board of directors have declared a dividend of 5 per cent. on account of current year, payable on the 17th March to the shareholders on the books 18th February."

Tati Concessions.

The report of the Tati Concessions, Ltd., for the twelve months ended June 30 last states that the result for the period covered by the accounts is not of a satisfactory nature owing almost entirely to the excessive and abnormal drought which has existed and which has not only prevented the forward policy of the company being continued with the success anticipated, but has seriously militated against the company's income, so that the revenue of the territory is £3,886 less than the preceding year.

THE WEEK IN THE SHAREMARKET.

Easier with Firmer Ending—Far East Rand Stocks in Favour.

The week has been less active than its predecessor, but prices remain fairly firm. After a slackening off on Wednesday, Thursday saw a better tone, and the whole tendency of the market towards the end of the week seems more hopeful. Most of the dividend distributions have now been made, and some of the money released is finding its way back into the market. Far East Rand stocks remain in the van of public favour, and led by Van Ryn Deeps, Modder Deeps, New Modders and Gedulds, this section is likely to retain interest. The January output possessed no unexpected features, and the quarterly reports issued so far are all fairly satisfactory. In tins business has been restricted, and diamonds are likewise still in the doldrums. Pilandsbergs have receded on Mr. Harger's report, and holders now await actual results from the washing.

* * * *

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thur. 12th.
Concrete Constn.	—	—	1 0*	—	—	—
Adairs Ushers	—	0 3*	0 3*	0 3*	0 3*	0 3
Afrikander Props. .	—	20 0†	17 6†	—	—	—
African Farms . . .	15 6*	15 8	15 9	15 8*	15 4	15 5
Apex Mines . . .	20 0†	18 9*	19 3*	19 3*	—	19 0*
Aurora West Utd. .	—	10 6*	10 6*	11 0	11 0†	10 0*
Bantjes Con	16 3	16 0*	16 0	16 0*		17 0†
Benoni Con.	1 10*	2 0	2 0	1 10*	1 11*	1 11*
Brakpan Mines .	—	54 6*	—	54 0*	-	—
Breyten Colls. .. .	30 0†	28 0*	29 6*	—	28 0*	29 6*
British S.A.	20 9*	20 9*	21 0*	21 0*	—	—
Bushveld Tins	0 7*	—	0 9†	0 8*	0 8*	—
Cassel Coals	—	13 0*	—		14 0*	14 0*
City and Sub. ...	43 3	44 0†	44 0†	44 0†	42 6*	43 0*
City Deeps	60 6*	60 6*	60 0*	61 0*	60 6*	60 6*
Cloverfield Mines ...	5 10*	5 7	5 7*	5 9	5 9	5 6
Clydesdale Colls. ...	9 0*	9 0*	9 0*	9 0*	9 0*	10 0*
Con. Investments ...	21 6*	21 6*	21 6*	21 6*	—	22 0†
Con. Langlaagtes ...	30 6	30 0*	30 6*	30 6*	29 6*	30 6*
Con. Main Reefs ...	18 0*	18 0*	18 0*	18 0*	17 9*	17 9*
Coronation Colls. ...	15 0*	16 6*	17 6*	17 6*	18 0*	19 0*
Coronation Freeholds	—	0 5*	0 5*	0 5*	0 4*	0 4*
Coronation Synd. ...	4 0*	4 0*	4 0*	4 0*	4 0*	—
Crown Diamonds ...	9 0	8 9*	8 9*	8 9*	8 9	8 9*
Doornhoek Tins ...	—	3 0*	3 0*	—	3 6†	3 6†
East Rand Centrals	9 0*	9 3*	9 3*	9 3*	—	2 0‡
East Rand Coals ...	1 9*	—	1 8	1 7	1 6*	1 8*
East Rand Deeps ...	2 0*	—	1 9*	1 10*	1 6*	1 9*
East Rand Props. ...	42 6	—	40 0*	40 3*	39 0*	40 0*
East Rand Debs. ...	£85	—	£85	—	£85	—
Eastern Golds	1 6*	1 6*	1 6*	1 6*	—	1 5*
Frank Smith Diam.	7 0†	6 3*	6 3*	6 4*	6 3*	6 4*
French Rands	—	1 9*	—	—	—	—
Geduld Props.	—	24 9*	24 9*	25 6	24 3*	26 0
Geldenhuis Deep .	—	22 6*	22 6*	22 6*	—	—
Glencairns	—	2 0*	2 0*	—	1 6*	1 0
Glencoe Colls.	—		6 0*	—	—	6 3*
Glynn's Lydenburgs	—	—	—	12 6	—	12 0*
Government Areas .	21 0	21 0	21 3	21 3	20 9	20 9
Joburg Board of Ex.	25 0†	—	25 0†	25 0†	24 0†	26 3†
Johannesburg Est. .	—	—	2 6*	—	3 0*	—
Jumpers . . .	3 0*	—	5 0*	—	3 0*	—
Jupiters . . .	5 9*	—	6 3*	5 6*	5 6*	5 6*
Kaalfontein Diam. .	0 5*	0 6†	—	0 6†	0 6†	0 4*
Klerksdorp Props .	2 3*	2 3*	2 3*	2 0*	2 6†	2 3
Knight Centrals ..	8 10*	8 10*	9 3	9 1	8 9*	9 0*
Knight Deeps		-	—	-	30 0*	31 0*
Lace Props	3 10*	3 9*	3 11	3 8*	3 10	3 8*
Lancaster Wests	1 0*		—	—	—	—
Luipaardsvlei Est. .	9 6*	9 6*	9 6*	9 6*	9 6*	9 6*
Lydenburg G.F. ..	3 0*	3 0*	3 0*	3 1*	3 0*	3 1*
Main Reef Wests .	9 6*	9 3*	9 6*	9 6	9 3*	9 6*
Do. Debentures .	£62½*	£62½*	-	£62½*	—	£66½*
Middelvlei Estates .	1 3*	1 3*	1 3*	1 3*	1 3*	1 1*
Modder B's	81 6*	81 6*	82 6*	82 6*	—	—
Modder Deeps	42 3	42 3	43 0	44 0	43 0	43 6*
Natal Nav. Coll. ..	—	16 0†	16 6	—	—	15 0*
New Boksburgs	—	-	0 9*	.		1 0*
New Eland Diam. .	—	27 0*	27 0*	27 0	28 0	-
New Era Con. . .	6 9*	—	—	—	6 6*	6 10*
New Geduld Deeps .	2 0*	2 1	2 0*	2 0	2 0*	2 0*
New Kleinfonteins .	25 0*	24 6	25 0	25 0	24 9	25 0
New Modderftn. ..	—	—	240 0*	245 0*	—	240 0*
New Rietfonteins .	—		3 0*	3 3*	3 3	2 6*
New Unifieds	—	15 6†		15 6†	12 6†	
Nigels . .	—	—	—	18 0†	—	—
Orange Diamonds	—	1 6*	—	1 6*	1 6*	1 7*
Piggs Peak £	9 6*	9 6*	—	—	9 6*	9 6*
Premier Pref.	—	—	—	—	170 0*	172 6*
Pretoria Cement Co.	45 6*	45 6*	45 6*	45 6*	46 0†	45 6*
Princess	—	4 0*	—	—	—	5 0*
Rand Collieries ...	—	—	3 6*	4 0†	4 1*	2 6*
Rand Klips	—	2 9*	3 0*	2 6*	2 3*	2 5*
Rand Nucleus	—	1 10*	1 9*	1 10*	1 10	1 10*
Randfontein Deeps .	4 0*	4 1*	4 0*	4 0*	—	4 2*
Randfontein Est. ...	25 9*	25 9*	—	25 6*	25 0*	25 0*
Roberts Victors ...	—	28 6*	—	28 6*	28 6*	28 6*
Robinson Deeps ...	—	30 6*	30 0*	30 6	31 0†	30 0*
Rooiberg Minerals .	26 6*	27 6*	28 6	28 3*	28 0*	27 6*
Ryan Nigels	3 2*	3 2*	—	3 2*	3 0*	3 2*
Shebas	5 3*	5 3*	5 3*	5 3*	5 3*	5 3*
Simmer Deeps	—	—	2 9†	3 0†	2 6†	2 6†
S.A. Diamonds	30 0*	30 0*	—	30 0*	30 0*	30 0*
S.A. Lands	3 7*	3 7*	3 6*	3 6*	3 6*	3 5
Springs Mines	13 9*	14 3	14 6*	14 3*	14 3	14 6*
Sub Nigels	12 0*	12 0*	11 9*	12 0*	11 9*	12 0*
Swaziland Tins ...	41 0*	—	—	40 0*	40 0*	41 0*
Trans. & Delagoa	40 0*	—	42 6*	—	—	—
Trans. Coal Trusts .	—	36 0	36 0	36 0	36 0*	36 0
Trans. G.M. Est. ...	49 0*	49 0*	49 0*	49 0*	49 0*	49 0*
Tudors	—	—	1 6†	—	—	—
Van Dyks	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Van Ryn Deeps ...	41 0	41 0	41 6	42 3	41 3	41 6*
Village Deeps	36 6†	35 6	35 6*	36 0†	36 0†	36 0†
Village Main Reefs .	—	—	—	—	34 6*	—
Vogel. Con. Deeps .	—	—	—	1 0*	—	—
West Rand Con. ...	—	—		—	8 0*	—
Witbank Colls.	45 0*	45 0*	48 0*	—	—	45 0*
Witwatersrands	71 0*	69 6*	—	—	69 0*	—
Wit. Deeps	56 0*	56 0*	56 3*	56 0*	55 0*	56 6
Wit. Townships . .	—	20 0*	—	20 0*	—	20 0*
Wolhuters	14 6	14 3	14 3	14 0*	13 9	13 9*
Zaaiplaats Tins ...	32 6*	32 6*	32 6	33 0	32 3*	32 6*

*Buyers. †Sellers. ‡ Buyers (new).

*Buyers. †Sellers.

In regard to the new Rand Water Board Bill which it is proposed to present to Parliament during the present session, the Johannesburg Municipal Council has received a letter from the Chamber of Mines, which indicates that unless the municipality agrees to a 50 per cent. basis of the Rand Water Board debt the mines will withdraw from the new water scheme.

The National Bank of South Africa, Ltd., and the London County and Westminster Bank, Ltd., have been jointly entrusted by the Government of the Union of South Africa to issue a loan of four millions sterling. The list was opened and closed this week; the result was not known at time of going to press.

The "WIDDOP" OIL ENGINE.

Makers of PETROL and PARAFFIN ENGINES and direct coupled lighting sets ; also makers of 2-STROKE SEMI DIESEL CRUDE OIL ENGINES.

Makers—
H. WIDDOP & CO.,
KEIGHLEY, ENGLAND.

AUTOMOBILE NOTES.

Imperial Motor Transport Council.

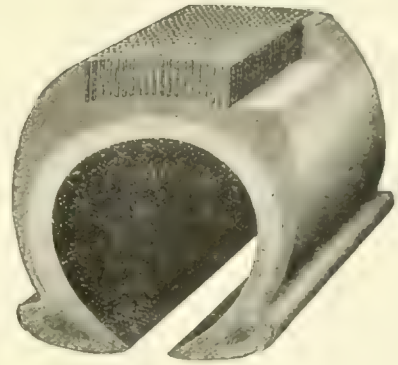
The secretary writes:—" I beg to enclose particulars of the constitution of the Alcohol Motor Fuel Committee formed by the Imperial Motor Transport Council in accordance with the unanimous desire of upwards of two hundred delegates from all parts of the Empire who attended the Imperial Motor Transport Conference in July last. It is the intention of the Committee to conduct investigations into the possibility of obtaining adequate supplies of alcohol suitable for motor fuel at sufficiently low prices. Also, to direct experiments tending towards the production of engines suited to employ alcohol as a fuel. I think you will agree that the constitution of the Committee is such as to ensure a thorough and impartial consideration of all matters brought before it. The Committee will report to the Imperial Motor Transport Council, and its findings will only be made public through the medium and with the approval of the Council. The constitution of the Council itself has already been made public. It is a strong body, representative not only of motoring interests in this country, but of Government Departments interested in the improvement of transport facilities, and the Governments of the self-governing Dominions and the Colonies. The Committee is now about to commence its work. Its meetings will be held at the Royal Automobile Club, and the honorary secretary will be glad to receive the names of those who are conversant with any branches of the work of the Committee, and will be willing to give evidence before it."

Mr. Henry Sturmey estimates that the annual " running expenses " of the 179,926 motor-cyclists in the United Kingdom are as follow:—Tyres, £2,249,075; petrol, £1,777,006; oil, £159,930; repairs, etc., £899,630; licences, £179,926—total, £5,265,567. If to this we add the sum of £1,938,500, shown to be absorbed in the purchase of new machines, we get the grand total of £7,204,067 as the sum spent yearly by motor-cyclists on the purchase and direct running expenses of their machines, and if to this we add the money spent whilst motoring, *i.e.*, hotel expenses during tours, tips., sight-seeing fees, etc., etc., he has no doubt the money annually expended on motor-cycles and motor-cycling is £8,000,000! In addition, Mr. Sturmey estimates that the manufacturers and agents receive well over four millions a year in the sale of machines for use at Home and abroad.

Increasing Cost of Engine Fuel.

So expensive is petrol in London (says the *Engineering and Mining Journal*) that Parliament intends to take a hand in the matter because it is handicapping shipping and all other branches of the motor industry. Even the two-penny rider in the omnibus would be money in pocket if some cheap substitute for gasoline would come into use. Parliament now proposes that benzole shall be this substitute. Until a few short months ago there were only about thirty dealers in Great Britain who could furnish consumers with benzole; to-day there are more than 300, and increasing all the time. Alfred Bigland, M.P., now proposes to largely increase the output by reasonable governmental action. In this way it is expected to make it possible for municipal and privately-owned gas companies to build a by-products plant to manufacture this necessity. Benzole, it seems, is cheap and most satisfactory for motor boats, marine engines, automobiles, 'buses and all motor vehicles. The whole world is beginning to sit up and take notice of benzole. England exported from January to May, 1911, 1,716,851 gallons, while in the same period this year, 1913, 3,074,131 gallons was shipped abroad. During this period of 1911, 24,424,547 gallons of petrol was imported there, and 40,074,276 gallons in those five months of the current year. When it is recalled that England at present mines 260,000,000 tons of coal each year, of which one-fourth is exported to various countries, and that benzole is one of the by-products, Mr. Bigland's purpose can be appreciated. He argues that if you make allowances for the amount consumed in the manufacture of coal gas, the iron and steel trade, and other great industrial undertakings, there should be produced, if the present wasteful methods of consumption in the raw are avoided, such a large quantity of valuable and consumable benzole as to yield a surplus for exportation to the United States. The smokeless, residual coke left would then still be available for commercial purposes. Thus Parliament may be expected to perform the miraculous feat of converting one into two with the value of three. H. L. Doherty, of New York, engineer and petrol authority, says that about twenty times as much benzole is consumed at the gas burner as there is left in the gas tar for later distillation and purification. He says that there is little or no reason to quarrel with figures that indicate a satisfactory total valume of potential supply from such a source. It has been figured that if all the benzole was distilled out of the coal gas of London alone, 12,000,000 gallons each year would be the result. Hence when the 40,000,000 gallons of all of Great Britain is considered, the cheapness, availability and large supply would almost drive gasoline into the background.

STELASTIC



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FIRST FLOOR,

COMMERCIAL EXCHANGE BUILDINGS,

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JOHANNESBURG.

BOOKS RECEIVED.

"The Diamond Fields of Southern Africa," by P. A. Wagner, B.Sc., Dr. Ing (Freiberg), etc. Johannesburg: The Transvaal Leader.

In this important work Dr. Wagner has sought to annotate all that is best in technical literature relating to the diamond winning industry of South Africa, to bring up to date the theories regarding the genesiology of diamondiferous pipes and their contained gems, to provide a directory of all the important diamond mining ventures of South Africa, and in short to present a text book of the diamond mining industry, its statistics, technology and trade. In this Dr. Wagner has succeeded admirably. The present volume, which is a work of 347 pages, replete with many photographs, maps and diagrams, is a greatly enlarged English edition of "Die Diamantführenden Gesteine Südafrikas Ihr Abbau and Ihre Aufbereitung," which appeared in 1909. During the first years that have passed the author has had exceptional opportunities of continuing his studies at all the important centres of diamond production in the Sub-Continent, and he began "The Diamond Mines of Southern Africa," firmly resolved that it should contain all that is worth knowing of an industry, small in its beginnings, which as a result of the enormous increase in the world's wealth during the two past decades has assumed astonishing proportions. The work is divided into three sections, of which the first and second treat respectively of the primary (kimberlite) occurrences and the detrital diamondiferous deposits, while the third is devoted to the diamond mining companies and to statistics. The scope of the different sections is clearly indicated in the table of contents which takes the place of an index. The work has been well produced by a local publishing firm, "The Transvaal Leader." Whilst the table of contents affords a good insight into the various pages of the volume the need of a full and ordinary index in an exceedingly informative and comprehensive volume of this kind is felt, and we think it a pity that it has not been incorporated. We think, too, that Dr. Wagner might have devoted a special chapter to the history of diamond mining in South Africa, than which there are no more fascinating pages in the annals of mining. But these, after all, are only minor objections and pale into comparative insignificance by the side of the many admirable features of the work. So numerous are the interesting sections of the book that it is here impossible to single out any special chapter or paragraph for particular mention. We may, however, direct attention to the table appearing on page 17, which gives the pipe areas of the most important claims, to the carefully compiled treatises on the geology, mineralogy and petrography of occurrences and the lucidly expressed chapters on diamond mining and the treatment of diamondiferous ground. The book can certainly be commended to the notice of all engaged in the South African diamond mining industry and to all who study or direct the great flood of wealth that each year goes forth from the diamondiferous areas of the Sub-Continent. In an appendix Dr. Wagner briefly reviews the important subject of diamond cutting in South Africa, but we note he refrains from venturing any opinion on the advisability or otherwise of establishing a local cutting industry.

"The African World Annual."

The reading public of the Continent who take an interest in its affairs have come to look each year for the production of the annual number of our enterprising contemporary, "The African World," of London. The 1913 production is as well got up, as well written, as beautifully illustrated as ever, and those who have perused preceding issues will know what high praise the foregoing statements imply. The volume now before us contains 336 pages, each of which is crammed full of interest or of pictorial beauty. Mr. Leo Weinthal and his assistants have dealt with Africa from Capetown to Cairo, from Zanzibar to Lagos, in a manner that compels admiration. All conceivable aspects of life, sport, travel and commerce are dealt with in this weighty volume, whilst its photographs constitute a veritable panorama of African views and a picture gallery of great Africans It is again the annual *de luxe* of the Dark Continent.

ANGLO-FRENCH (TRANSVAAL) NAVIGATION COAL ESTATES, LIMITED.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twelfth Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room (Fourth Floor), NATIONAL BANK BUILDINGS, Simmonds Street, Johannesburg, on WEDNESDAY, the 18th day of March, 1914, at 10 a.m.

BUSINESS.

1. To receive and consider the Statements of Accounts and the Reports of the Directors and the Auditors for the year ended 31st December, 1913.
2. To confirm the appointments of Messrs. Edward H. Read and C. P. Marais as Directors of the Company, in place of Messrs. George R. Airth and C. R. Pinder respectively, resigned.
3. To elect Directors in the place of Messrs. Wm. Dalrymple, G. W. Higgins, B. Hansford, A. Little, Edward H. Read and C. P. Marais, who retire in terms of the Company's Articles of Association, but who are eligible and offer themselves for re-election.
4. To confirm the appointment of Mr. Samuel Thomson as an Auditor to the Company, in place of Messrs. C. L. Andersson & Company, resigned.
5. To appoint Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors, Messrs. F. W. Diamond & English and Samuel Thomson.
6. To transact all such other business as may, under the Articles of Association, be transacted at an Ordinary General Meeting.

By Order of the Board.
L. S. RAYMOND,
Secretary.

Head Office:
Third Floor, National Bank Buildings,
Simmonds Street, Johannesburg,
4th February, 1914.

THE RANDFONTEIN ESTATES GOLD MINING CO. (WITWATERSRAND), Ltd.

(Incorporated in the Transvaal.)

Six per cent. First Mortgage Debentures.

NOTICE IS HEREBY GIVEN that the Debenture Register will be Closed from the 22nd FEBRUARY, 1914, to the 28th FEBRUARY, 1914, both days inclusive, and that Warrants in payment of the half year's interest due on the 1st March, 1914, will be posted to registered Debenture holders on the 28th inst.

By Order.
J. H. TILEY,
Transfer Secretary.

Head Transfer Office:
26-28, Robinson Buildings, Johannesburg,
11th February, 1914.

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THE MOST EFFICIENT FOR ALL SERVICES
CONCRETE & TAR MACADAM MACHINERY
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THE SOUTH AFRICAN
Mining Journal,

WITH WHICH IS INCORPORATED
South African Mines, Commerce and Industries.
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NOTICE.—The postage of this issue of the *S.A. Mining Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Safety First Committee.

Recent industrial unrest may have overshadowed the labours of the Safety First Committee, but the work none the less goes steadily on. Various devices, appliances and ideas applicable to the Rand have been examined by the Committee; and details of those considered likely to be of practical value in the campaign against accidents have been communicated to mine managers. It is noteworthy that the latter, to an increasing degree, are wholeheartedly seconding these efforts. It is understood, moreover, that steps are being taken to give increased publicity to the work of the Committee, and to enlist the co-operation of men of every department on the mines in the furtherance of their own safety and the aims of the Committee.

* * * *

The Pilandsberg Affair.

The protracted slump in Pilandsbergs has caused no little consternation in the camp of confident shareholders, and brought us numerous requests for enlightenment. We do not profess to be in the confidence of the directors of the concern, neither can we decipher the cryptic vagaries of the sharemarket quotation. Some indignant shareholders write demanding a Government enquiry, which seems invariably to be the last fond hope of the disillusioned. As a fact, we believe the Government has already made itself fully acquainted with the position at the property, and with the course of operations carried on there since the start. Beyond that, of course, it is difficult to go. Sharemarket operators have a way of hiding their tracks; and none of the enquiries of this sort made of recent years by the Government has really elicited anything conclusive. Though Mr. Harger's report is certainly a wishy-washy document, the only advice one can give to the patient shareholders at this juncture is to "wait and see."

* * * *

Kaalfonteins and Madagascar Oil.

An indignant shareholder called on us this week with a grievance against the Kaalfontein Diamond and Estate Co., Ltd. It appears he has been a registered shareholder for over 12 months, but has never had a notice of a meeting or any account of the work of the company. We referred him to the secretary of the company, who, it appears, pacified him with a promise of a copy of the last annual report by the next post. The following day the shareholder received a type-written document, ending abruptly without any signature, purporting to be a copy of the directors' report, dated December 18th, 1913. The wording of the report is far from clear, even to us who are used to winnowing the grain out of the usual chaff of company reports, and utterly unintelligible to the unfortunate shareholder. What can be gathered is that the company abandoned its oil interests in Madagascar before the present "boomlet" in that region; and then, with an unexplained lack of consistency, invested £2,040 in the Taylor-Coryell Syndicate, of Madagascar, in the purchase of 85 shares at £24 each, which now stand in the market at only £10 each. From another source we learn that there is a satisfactory explanation for all this, namely, that the company made a very advantageous bargain with the Taylor-Coryell Syndicate, and by investing the extra £2,040 in that venture made a bold bid to win back the £10,000 they had already lost in Madagascar oil. Though we are by no means convinced that this is not "throwing good money after bad," we have nothing to say against the transaction except that the directors owed it to their shareholders to state the facts in plain English in their annual report. There is nothing to be ashamed of in the truth, but the shareholders have good reason to complain of the form and method of issuing the annual report.

Manambolo Oil Syndicate.

A new flotation, which is intended to deal with petroliferous areas in the Betsiriry Valley, Madagascar, is the Manambolo Oil Syndicate, Ltd. The capital of the undertaking is £130,000 in shares of 10s. each, of which 80,000 shares are set aside to provide working capital. The area to be dealt with comprises about 74 square miles, and the blocks contained in it are favourably situated with regard to the two most notable anticlines hitherto discovered in the Betsiriry Valley. Dr. Merensky says, in this connection, that the blocks "must be looked upon as a most promising area," while Mr. James H. Taylor has reported to the Syndicate that their holdings are "equal to any and superior to some of the fields."

* * * *

"I.M.M." and the Kirkland Promotion.

Considerable comment has been aroused in London among members of the mining profession, and more especially those who are connected with the Institution of Mining and Metallurgy, by the appearance on the directorate of the latest Kirkland promotion, the Kirkland Lake Exploration, Ltd., of the name of Dr. F. H. Hatch, the President-Elect of that institution. It will be remembered that in the criticism of the prospectus of this undertaking in the financial press it was described as "nothing more than a big gamble, with apparently most of the chances in favour of the promoters," and at the same time it was suggested that possibly it would have been better if Dr. Hatch had confined himself to the position of consulting engineer. In view of the growing criticism of the venture Dr. Hatch's position on the board would seem to be untenable.

* * * *

Phthisis Statistics.

Some inaccuracies crept into the figures of phthisis payments, quoted in Reuter's report of the proceedings in the House of Assembly on Tuesday. According to Reuter's report, the Minister of Mines, replying to Mr. Drummond Chaplin, said that "the amount actually paid out up to January 31, 1914 (to applicants under the Phthisis Act), was £116,327, and the amount standing to the credit of the insurance fund was £27,917." According to the Secretary of the Miners' Phthisis Board the amount actually paid out to these applicants up to the date mentioned was £1,163,278 4s.; while the amount standing to the credit of the insurance fund on the same date was £279,092 17s. 1d.

* * * *

Spontaneous Combustion Committee's Report.

The first report of the British Departmental Committee on Spontaneous Combustion of Coal in Mines has been issued at a somewhat early stage of the enquiry, and perhaps to some extent unexpectedly. Certainly it is premature from the standpoint of unanimity, for there are appended to the Report no less than seven memoranda representing the divergent views of individual members of the Committee. The reason given for the issue of this Report is that the Committee felt that they had taken sufficient evidence to enable them to arrive at definite conclusions respecting the dangers arising from gob fires, even although they are not yet prepared to offer any solution of the problems connected with their cause and the best means of prevention or mitigation.

* * * *

The Sharemarket Recovery.

The *Bankers' Magazine* to hand by this mail, commenting on Stock Exchange values, says that it is some time since there was so dramatic a recovery in Stock Exchange securities as that which has occurred during the month of January. Only one month back from the date of the present valuation—namely, 18th December—Consols were at the lowest point in their history, and now, within the month, not only has the previous month's depreciation in Consols and kindred stocks been entirely recovered, but there has been a great general upward movement in values, resulting in a net appreciation in the list of representative securities of just over £48,000,000, the exact figures being as follows:—Aggregate value of 387 representative securities on December 18, 1913, £3,341,085,000; aggregate value of 387 representative securities on January 20, 1914, £3,389,478,000; increase, £48,393,000. Our contemporary goes on to say that an outstanding feature of the month has been the great appreciation in gilt-edged securities, British and Indian funds alone showing a rise of about 3 per cent., while a remarkable advance has occurred in both the Ordinary and Prior Charge stocks of English railways, the Preferences in particular being remarkably strong, showing an all-round gain of something like 4½ per cent. Next in importance to the movement in Home securities has been the general rally in American descriptions, where there is a rise in the representative list of over £13,000,000, or about 4 per cent. On the other hand, railways in British possessions have suffered a considerable setback, chiefly as the result of a decline in Canadian Pacific shares. Moreover, the net gain for the month would have been considerably greater, but for a fall of over £7,000,000 in Foreign Government securities, where a feature has been the weakness of Brazilian and Mexican descriptions. In the purely speculative sections South African mining shares, after being depressed by the labour situation in South Africa, became firm on the success which attended the energetic action on the part of the Transvaal Government in dealing with the labour riots, and prices show a moderate improvement for the month. Copper mining shares and miscellaneous descriptions, on the other hand, are rather lower than a month ago.

* * * *

South African Gold Trust.

The report to 31st December, 1913, of the South African Gold Trust, Ltd., states that the realised net profits on the year's operations, almost entirely derived from dividends on investments and interest on loans, after deducting Debenture interest and all charges, amounts to £99,129, from which the dividend on the Preference shares and French Government taxes have been deducted, leaving £68,397, which, with the amount brought forward—namely, £63,444—makes a total of £131,841, subject to depreciation. The directors regret to have to report that the total depreciation amounts for the year to £286,396. This amount has been provided for by charging £150,000 against wasting assets account, £30,000 against a credit reserved in previous years for unforeseen contingencies, and the balance of £106,396 against the profit and loss account, leaving the sum of £25,445 to be carried forward. Under these circumstances the directors regret that they are unable to recommend the distribution of a dividend on the Ordinary shares.

* * * *

"Safety First."

The Safety Committee of the South Wales Miners' Federation have drawn up a list of suggestions for submission to a conference to be held at Cardiff. The proposals include the question of the construction of tram and main haulage roads, the method of timbering, and the advisability of changing, if possible, the safety lamps now in use for portable electric lamps. There will also be a request for legislation making it compulsory that, in order to give the mine time to cool down, there shall be a total cessation from work in mines for at least six hours out of every twenty-four.

* * * *

The Life of the Rand.

For sheer extravagant optimism a paragraph appearing in the issue of *South Africa* to hand by this mail will certainly take a lot of beating. The note in question is entitled "Life of the Rand," and it refers to the evidence submitted by the Chamber of Mines to the Economic Commission, more particularly in regard to the estimate—

> "That an annual crushing of 28,000,000 tons could be maintained for only five years, and that seventeen years hence the crushings would have fallen to 14,000,000 tons." This London newspaper authority on the Rand comments: "We at once challenged the accuracy of this statement, which we described as misleading and gratuitously gloomy, and proceeded to quote the prediction of Our Special Commissioner, who is now once again on his way to South Africa, to the effect that the Rand output will advance for twenty years, will remain at about the same figure for a decade, will decline slowly to the level of 50,000,000 tons per annum, at which it will stay for another twenty-five years, slowly waning after that for another fifty. As under normal conditions the

> aggregate tonnage increases at the rate of some 2,000,000 annually, this means that twenty years hence the aggregate yearly tonnage of the Witwatersrand mines will be some 65,000,000 or 70,000,000, providing, of course, that there are no fresh troubles of a serious nature to retard the industry's progress."

Prodigious! We ourselves can hardly by any flight of fancy be termed pessimists, and in the columns of this journal we have characterised the Chamber's evidence on this point as unjustifiably gloomy. But at the same time we are certainly not prepared to endorse the prophecies of *South Africa's* "Special Commissioner." We are most hopeful as to the future, but confess to a feeling of confidence that there will be "troubles of a serious nature to retard the industry's progress" if the consummation of that onward march is to be a yearly tonnage of between 65 and 70 million tons. Frankly, we are certain that the Rand is unequal to a tonnage of about 2½ times the enormous amount now being milled. The hysterical optimism of *South Africa* is largely explained when it is stated that the Special Commissioner is none other than Mr. E. P. Mathers, who, we believe, claims to have founded the Witwatersrand mining industry.

* * * *

Neumann Mines in the Past Quarter.

Quarterly reports just issued by four gold mining companies under the control of S. Neumann & Co.—the Wit. Deep, Knight Central, Consolidated Main Reef, and Main Reef West—show that in the case of the two former concerns ore reserves at the end of the year were being re-calculated, whilst the fully developed payable tonnages of the two other mines at the end of 1913 were:—Consolidated Main Reef, 610,490 tons; Main Reef West, 529,250 tons. As to profits, the Wit. Deep earned the largest amount—£81,972 for the three months, the Consolidated Main Reef coming next with £30,273, and then the Main Reef West £14,111, and the Knight Central £9,210. In regard to this last concern it is important to note development results south of the dyke. Unfortunately these were disappointing. Out of 965 feet sampled the payable patches totalled 215 feet, averaging 6·1 dwts. over 51 inches. The remaining 750 feet averaged only 2 dwts. over 56 inches. More stamps were dropped this week, and the profits may be correspondingly improved.

* * * *

Congo Mining.

Congo mining is progressing. Up to November 5, 1913, the total output of copper for 1913 was 5,831 tonnes of ingots and 129 tonnes of matte. The plant required for working the tin mines of Bukama was sent from Antwerp in June last, and the exploitation of the tin alluvials of this region is to be undertaken as quickly as possible. The gold mines of Kilo will show a considerably increased output for 1913. They are situated in the north-east of the Belgian Congo, and employ about 2,600 negroes, whose rate of pay is 6 francs per month with food and lodging. The output for the last five years is as follows: 1909, 656 kilos; 1910, 876 kilos; 1911, 639 kilos; 1912, 984 kilos; 1913, 1,360 kilos (estimate). The gold worked is alluvial, and the reserves are estimated at about 12,500 kilos. Efforts are now being made to discover the quartz reefs considered to be the origin of the gold.

* * * *

Rhodesian Chrome Iron Ore.

Although the output of chrome iron ore from the Southern Rhodesian deposits, close to Selukwe Station, was less by 5,877 tons in 1913 than in 1912, this branch of Charterland mining nevertheless managed to distribute £11,891 in dividends during last year, and with a reduction in railway rates the industry would become much more profitable than it is at present. Last year the output was 63,383 tons, of a value of £141,481. The value of the crude ore shipped from Beira works out at about £2 5s. per ton, but as from this there has to be deducted mining charges and a £1 per ton railway rate between Selukwe and Beira, the margin of profit is small. A reduction of some sort in rates may be forthcoming at an early date as it is stated that deposits in other parts of the world are coming into the competitive market, and rather than lose this profitable export trade the Beira and Mashonaland Railways would, it seems reasonable to assume, assist the Selukwe industry by lowering freight charges.

TOPICS OF THE WEEK.

SMALL HOLDINGS FOR MINERS.

THE reports of Union Government Commissions divide themselves naturally into two very different categories: those that are doomed to oblivion, and those that are destined for permanence as sign-posts on the road to progress. The report of the Small Holdings Commission is one of the latter rare sort. It is practical, constructive and informative. There is internal evidence that the lessons of other new countries have been studied and assimilated; that the local man with ideas—even the crank—has been patiently listened to; and that a sincere and thoughtful attempt has been made to deal with the terms of reference in a manner that will be really helpful to the cause of closer settlement in South Africa. The form of closer settlement aimed at, in this case, it will be remembered, is concerned with the miner, and the men engaged in industrial pursuits on the Rand. The Commission was appointed by the Government, on the motion of Dr. Macaulay, who represents the Reef constituency of Denver; and it may be described as the first fruit and blossom of the perennial land-hunger that has marked in an increasing degree the landless workers of the Witwatersrand. The personnel of the Commission for the task was an eminently strong one; and the result of their labours is a document, as we have said, of great practical value. The danger is that in the present congested state of the public business before the Government, and in view of the known disinclination of the Cabinet to embark upon anything in the nature of closer settlement schemes, the excellent recommendations of the Commission may fall upon deaf ears, and the result of their very thorough and painstaking labours may be consigned to the limbo of forgotten things. From that fate, we look to the real political friends of the miner to save it. Briefly stated, the questions submitted to the Commission were (1) the necessity for establishing small holdings on the Rand for the purpose of closer settlement by miners and others engaged in industrial occupations; (2) the extent of land available for such occupation; (3) the form of tenure and conditions under which land should be allotted; and (4) the legislative changes, if any, for carrying out any scheme found to be necessary. To all these questions the Commission return very complete and practical answers. The Commission regard the question of small holdings as part of the general subject of land settlement. The main arguments in favour of small holdings are, therefore, those on which the case for an active policy of land settlement rests. In their opinion agriculture, in the widest sense of the term, is destined to become South Africa's principal industry, and the future of the white man in South Africa ultimately depends on his success in effective occupation of the land as an agriculturist. After briefly examining the local circumstances of the three mining districts, with special reference to numbers and occupations of the white population, the rates of wages paid, the cost of living, and the school statistics, they state their conclusion that from the point of view of the believer in land settlement the white population on the Rand may rightly be regarded as forming a vast reservoir of potential settlers. The Rand community still consists in the main of an immigrant population from oversea. Many of these immigrants are as yet by no means securely rooted in the country: as evidence bearing on this point, statistics are quoted showing the number of married white employees on the mines whose wives are resident oversea. The Commission consider that a judicious policy of land settlement on the basis of Small Holdings affords the most practical means of retaining these immigrants as part of the country's permanent population. The Commission read the first clause of the reference as covering two distinct kinds of settlement: (1) The settlement on Small Holdings of persons who will continue to be engaged in mining or some industrial employment and will only devote their spare time and energies to their holdings; (2) Settlement on Small Holdings of persons who have been engaged in mining or some industrial employment, and who have retired or are proposing to retire therefrom, and wish to devote themselves to farming and to make their living out of it. The evidence shows clearly the existence of a demand for Small Holdings of two distinct types to satisfy the separate needs of these two classes. The Commission distinguish these two types of small holdings under the names of Garden Holdings and Farm Holdings. The most important distinction between the Garden Holding and the Farm Holding is that the Farm Holding is intended to be a holding out of which a man can make a living, the Garden Holding, as its name implies, is not. Garden Holdings are those which will obviously have the most direct effect on the social conditions of the Rand, but Farm Holdings will also have an important effect on such conditions. The establishment of Small Holdings will tend to improve the social conditions of the Rand in many respects. The Commission find there exists in the three districts ample land within a distance of about ten miles north and south of the Main Reef which, if it were available, could be effectively occupied in Small Holdings. The greater portion of the land is not first-class agricultural land, but it is of fair average quality, capable of giving a good return if properly worked. It is suitable for both classes of Small Holdings, though only a very small proportion of the land appears to be irrigable. Having arrived at these two important conclusions, viz., the desire for small holdings, and the fact that ample land is available in the vicinity, the Commissioners start in on what is, after all, the real crux of their work: " how to make that land available for small holdings." Here, of course, they are, in the vernacular, " up against " a whole Statute Book of laws, consciously or unconsciously designed to frustrate any scheme of closer settlement. For instance, the net effect of the Townships Act, 1907, is simply to make it impossible for a farm to be cut up into small holdings. As a fact, Dr. Macdonald and those who think like him may talk till they are hoarse about closer settlement, but the law is dead against it; and unless the Act of 1907 be repealed none of the much vaunted settlement schemes can go through. To achieve their objects the Commission also blithely advocate the taxation of farms not beneficially occupied—Mr. Lucas, *more suo*, even plumps for the " single tax." Further the Gold Law will have to be drastically altered if any such land scheme is to be put into effect on the Rand. And this brings us up to the big outstanding feature of the whole thing. Is the Government likely seriously to consider all these far-reaching proposals—to alter the laws and tax land, not beneficially occupied? We fear not. The Commissioners state the facts boldly, nakedly, without reservation or equivocation. The reforms they recommend, however, are such as it is notorious the Government is not enamoured of. The Commissioners have done their duty. It remains to be seen how the Government will do theirs.

THE PREMIER COMPANY AND THE DIAMOND OUTLOOK.

It is a sad commentary on the wisdom of South African investors that local interest in the annual meeting of the Premier Diamond Mining Company, Ltd., centres less in the results from that property than in the information that is usually forthcoming on the general prospects of the diamond market. Doubtless it is for this reason that the Acting Chairman this year, Mr. Gustav Imroth, contented himself, as far as the affairs of the company were concerned, with recapitulating the figures in the balance sheet and profit and loss account, rounding off his speech with an extended reference to the outlook for diamonds and the advantages of a producers' " combine." It is unnecessary to follow Mr. Imroth into his review of the finances of the company, as these were dealt with very fully in a recent issue. His remarks in regard to the general prospects of the market are, of course, of wide significance, and bear directly on the immediate outlook for the whole diamond industry of South Africa. " I am glad to say that there are now signs of a gradual steady improvement in the demand," said Mr. Imroth, " so that on the whole the position looks very healthy. There can be no doubt that as the wealth of the world increases, and in view of the greater popularity of the diamond, an increasing amount of money is spent upon diamonds. The mineral statistics of the Union Government show that the production of the Provinces within the Union for the year 1911 had a value of £8,746,724, and for the year 1912 £10,610,489. These figures take no account of the diamonds from German South-West Africa. Taking these into account, it is probable that the value of the rough diamonds won last year would be something over 12 million pounds. This expansion is also evident when it is remembered that the large output of the Premier mine, which has only been an important producer for a decade, and the still more recent output of the diamondiferous deposits of German South-West Africa, have been absorbed without any great dislocation of the market, and there seems every reason to expect that this expansion of the market will continue. In spite of this general expansion, however, irregularities in the market must occur from time to time under existing conditions, because whilst the production is steady and tending to increase, the demand is naturally influenced by many factors, and looking only at short periods of time it may vary considerably." There are critics, well versed in the intricacies of diamond market finance, who condemn Mr. Imroth's invincible optimism and quarrel with his reading of the signs. They hold that the present production of the stones is on a scale that cannot be justified by the demands of the market. The course of events in the current year will prove who is right. As it is, those who control the output must find themselves in a position of no little difficulty. Plainly an understanding to limit production has been arrived at, and Mr. Imroth's recital of the merits of a " combine " may therefore be regarded less as an appeal for further and future action than as an *apologia* for a *fait accompli*. Mr. Imroth eloquently reiterated the arguments in favour of a " combine," pointing out that the supplies from other sources were entirely negligible. He made the following announcement: " I think I have now said enough to show the great desirability of a diamond combine, and I am pleased to state that the big producers have not only practically recognised the principle of adjusting the production to the demand, but they also recognise the importance of maintaining prices, and that a continuation of that policy is assured. Further, I am personally confident that both our Government and the German Government must realise the importance and the advantages of an effective combination." Needless to state, no defence of a producer's " combine " is needed in this country. The pity is, it was not, as far as the large companies are concerned, effected years ago. The cynics who doubt the correctness of Mr. Imroth's favourable reading of the outlook will find collateral evidence of its soundness in the reports from the European diamond centres to hand by this mail. We quote from the *Financial Times*:—

> Satisfactory reports still continue from the Continental centres of the diamond trade, particularly from Antwerp, which has been overrun by buyers and manufacturers during the past week. It is satisfactory to note that the market is quickly responding to the better feeling. This is in part due to the fact that, while big manufacturers during the period of inactivity did not offer goods, but patiently awaited a revival, small dealers who were fortunate enough to dispose of their stocks did not re-purchase, and also adopted a waiting attitude. This tells on the present position, and, consequently, there is much less floating stock to be absorbed than would appear at first sight. The substantial sales of medium class goods, both by the Syndicate and the Premier Company, since the beginning of the year, proves the contention that a good many buyers were only waiting for some signs of activity to again come into the market. Again, the *Vossissche Zeitung* announces that a shipment of German produced goods is expected in Antwerp during the current month. This, however, will not exceed 70,000 carats, in accordance with the edict issued by the German Colonial Office, and it is a matter of great satisfaction that the production has been so considerably curtailed.

The big producers, the prospecting syndicates, and the river digger will all receive these reports with equal satisfaction.

What is Wrong with South African Mining?---II.

Dormant State-Owned Areas on Rand—Failure of Government to Attract Offers for Mining Leases—Why Capital is Shy. —"Giving Too Little and Asking Too Much."

THE fact that the Backveld, as represented by its Members in the Union House of Assembly, has now wakened up to the dangers menacing South African mining makes this the psychological moment for again airing the grievances of the industry. The life of "the goose that lays the golden eggs" is now known to be in danger and it is some consolation to note that the members for Transvaal country constituencies are betraying some natural anxiety in regard to the fate of the long-suffering wealth-producer. The value of the sympathy and understanding of the agricultural representatives in the House of Assembly at this juncture cannot be overestimated. If they can be brought to voice the injustice done to the Rand by excessive taxation, and to the "small man" and prospector by the State's policy of studied discouragement, the Government can hardly refuse to listen to them. They may be surprised to learn that in yet another way the State is directly responsible for the present limitation of Rand industry. As everybody knows, a large portion of the Far East Rand belongs to the Government. Areas have been proved to contain the Main Reef series at some considerable depth. It is the business of the Government to secure the working of those areas without delay, and on the best possible terms for the State. No one will dispute that the last thing that ought to be done is to act in such a manner that these promising areas should be locked up indefinitely. Yet what do we find? It is notorious that the scheme of Government leases, which was substituted in the last Gold Law for the ancient and more exciting method of individual pegging, has been an unqualified failure. The first area for which tenders were called was tendered for by various parties and eventually secured by the Barnato group upon terms which the Government themselves seem to think rather too good to be renewed in any subsequent enterprise of a similar kind. The terms of the lease were modified in the case of the Brakpan area in favour of the prospective tenderer, but although applications were called for as far back as the middle of October, 1912, no response was made to an invitation which the Government doubtless thought to be sufficiently alluring. The time limit for tenders was originally put at the 28th of February, 1913, but since no tender was received by that date, presumably, a second notice was issued on the 8th March, which stated that the time limit had been extended to the 30th June, 1913, and allowed it to be understood that a less stringent attitude would be taken up by the Treasury in the event of the guaranteed capital not being provided within a specified time, and that the question of the Government share of the profits would be susceptible of discussion as to the manner in which it might be paid. The new conditions did not appeal more strongly to capitalists than did the original ones. Again, only a few days before the modified Brakpan proposals were placed before the public, applications were invited for tenders in connection with the lease of 1,180 claims on the adjacent farm Witpoort. Here, in spite of the depressing example of the previous failure, and at a time when the unsuitability of the terms of the Brakpan-Schapenrust lease must have been engaging the profound attention of the Minister of Mines, an exactly similar set of proposals were made for the Witpoort scheme. The latter is, of course, a smaller undertaking, in which less working capital and a much smaller guarantee are involved, but, *pro rata*, the objections to the old Brakpan-Schapenrust terms are, presumably, as real in one case as they are in the other. To insist upon them as regards Witpoort while being ready, and, indeed, obliged, to make them less unattractive in the other instance, scarcely argued that the Government meant business.

AN UNCONSIDERED FACTOR.

As we pointed out at the time, an examination of the terms stipulated with regard to the various State leases offered, including that of the Government Areas (Modderfontein), and the very obvious fact that capitalists are not rushing at the baits lead one to the conclusion that the Treasury and the Mines Department have not yet grasped the underlying principles of mining finance. The average investor of modest means may be content to place his money where he can get a fair rate of interest for his money with a tolerable amount of security, but the individual who is responsible for the finding of three-quarters of a million or a million pounds sterling of working capital, under a penalty which ranges between £40,000 and £60,000, is not going to take the business in hand unless he sees a pretty considerable profit in the underwriting. Since the Government will not countenance a proceeding in connection with these leases which is the invariable accompaniment of promoting enterprise under other circumstances, it is clear that those who tender for the leases must rely upon the speculative instinct of the public to make up the deficiency. It is all very well to take up a lofty moral position in regard to these schemes. High finance, as it is called, is notoriously not in favour of discussing ethical principles and business methods in the same breath, nor, very commonly, of discussing the former subject at all. Those of us who have not the opportunity of dealing with millions are free to moralise as we like upon this, doubtless regrettable, state of things, but we cannot disregard facts. The Government apparently ignores the fact that the speculative element is certain to figure largely in the calculations of those who alone have the means of handling the leases, and until due allowance is made for this circumstance there is the prospect of the Brakpan-Schapenrust and Witpoort schemes being left severely alone for an indefinite period.

NOTHING TO "GO FOR."

In such a case as the Brakpan-Schapenrust undertaking, obviously the promoters and guarantors of such a venture have not great things to hope for from the market. A profit of, say, 6s. 2d. per ton milled, with a stamping capacity of 750,000 tons per annum, a sufficiently large crushing to arrange for, at the outset at any rate, would, if paid out to the last farthing—naturally, a remote possibility—be equivalent to about 18 per cent. on the total capital of the company. The actual dividend would, of course, be well under this figure, and, as we have previously observed, the investor might be more or less satisfied, but the individual who had staked large sums, and looked to the market to recompense him, would probably not feel too happy about it. It would then be possible to make some estimate of the position; as things are the capitalists who are asked to finance the Government lease areas are altogether in the dark as to what profits, and therefore dividends, are likely to be. In conclusion, it is only necessary to point to the circumstances of the Government Gold Mining Areas (Modderfontein) Consolidated, Limited, who have already gained some information about the quality of the reef they are to mill later on. The market price on February 18 was £1 1s. No one doubts the solidity of this concern as an investment; but if it were necessary to put it up for tender under conditions similar to those which were laid down originally it may be doubted whether the same competitive endeavours to secure the prize would again be witnessed. The fact is, the terms upon which the Government leases are offered fail to attract capital, and will continue so to fail until a radical change is made in the direction of improving those terms. Obviously, it ought to be the business of every well-wisher of mining activity, and of everyone desirous of advancing the interests of the country, to bring about such a change in the Government's methods as will unlock those rich Far East Rand State-owned areas for the greater expansion of industry.

THE RISE OF THE FAR EAST RAND.

Renewed Interest in the Rand's Great Eastern Area—Splendid Prospects of the Van Ryn Deep and Modder Deep—Position at the "State Mines"—"Far East" Contributing 14 per cent. of the Rand's Total Output—Daggafontein Shaft Sinking.

The recent labour unrest on the Rand tended in no inconsiderable degree to deflect attention from actual mining and milling developments along the Witwatersrand, but now that conditions have returned to normal public interest is again centred on the Far East Rand. Events of the past month or two have served amply to confirm the view expressed frequently in these columns that to this section of the Witwatersrand we must mainly look for future expansion of mining operations. The area lying east of Boksburg in itself constitutes a gold field which, if the Central Witwatersrand be excepted, has no parallel in the world to-day. There are, of course, in such an immense field as this is, poor as well as rich sections, disturbed as well as undisturbed zones. But taking the field as a whole it can safely be asserted that it is a highly promising proposition, and it is our firm belief that the dividends that will be distributed during the next quarter of a century by mines operating in that area will exceed even the most optimistic estimates that are framed to-day. Whilst on the subject of the Far East Rand, one cannot refrain from venturing a few words of comment on the evidence given by the Chamber of Mines to the Economic Commission in regard to this locality. The Chamber's portrayal of conditions and prospects in this section of the Witwatersrand appears to us to be unjustifiably gloomy. In the course of the Chamber's statement it is recorded that "the areas above referred to on the Far Eastern Rand contain hundreds of millions of tons of ore, but an enormous capital outlay, the extent of which it is needless to discuss now, will be required for its development. Indications as to value are admittedly very meagre. The little evidence which they do furnish is not of a very favourable character. It is also of some interest to point out that the characteristics of this region are not quite similar to those of the Central Rand. In the East Rand the gold is deposited largely in specific sections, some of which are likely to contain good values, while others are likely to be practically barren." Presumably the mines referred to in this depressing paragraph are the developing properties of the Far East Rand field the properties "in which a considerable amount of development has been done," and the 86,000 claims "under which the reef is known to lie at varying depths." There has, of course, been much disappointment in regard to several of these areas, and there is, too, considerable uncertainty as to reef values in some of the Far East Rand sections. But having regard to the rapid advance of mining on this field, the excellent profits being earned, and the thoroughly satisfactory manner in which development is proceeding at most of the working mines, one is, we submit, certainly entitled to adopt a more hopeful view than appears warranted by the Chamber of Mines' evidence. Some idea of the importance of the Far East Rand may be gained from the fact that to-day its seven productive mines are operating 880 stamps and 43 tube mills, are producing roughly one-seventh of the output of the whole Witwatersrand, and are earning roughly 20 per cent. of the profits of the Main Reef series. That these contributions will be very materially increased in the near future admits of no question. The accompanying table gives outputs, tonnages crushed, and profits earned by the mines in question during December last.

	Stamps.	Tubes.	Tons.	Value.	Costs.	Profit.
Brakpan Mines	140	8	46,350	£65,666	£43,223	£21,869
Geduld Prop. ...	60	5	19,750	30,308	22,621	7,589
Modder B. ...	80	5	31,000	57,026	26,302	30,378
New Kleinfntn.	200	4	49,700	64,090	42,199	21,182
New Modder ...	180	7	38,650	77,555	33,113	44,050
Van Ryn	140	6	39,000	52,697	31,007	21,691
Van Ryn Deep	80	8	37,050	62,017	35,562	26,454
	880	43	261,500	£409,359	234,027	£173,213

VAN RYN DEEP.

Whilst interest centres in the East Rand field as a whole, it should, however, be remarked that attention is at present mainly confined to the Van Ryn Deep and Modder Deep Levels. The former proposition has already proved itself to be one of the richest and most profitable gold mines ever opened up. Here milling was only commenced in the middle of July, but, despite many handicaps the company had up to the end of last year earned over £100,000 in profit and distributed a dividend of 15 per cent. on a capital of £1,196,892. During the December quarter the ore reserves were increased by 32,459 tons, and as evidencing the remarkable richness of the property it may be stated that out of 1,385 feet of development sampled no less than 1,349 feet were payable and of an average value of 24·8 dwts. over 20 ins. Judging from the development work achieved in this mine to date, it would certainly appear that the Van Ryn Deep is opening up one of the richest zones discovered in the history of the Rand. Particularly in the western section of the mine is development extraordinarily good. We understand that in the adjacent Modder Deep Levels property the best values appear to be trending in this direction, that is towards the Van Ryn Deep. Since the conclusion of the year development work has been uniformly good. The prospects of this concern are undeniably bright. By the use of small stope drills the management confidently expects to very materially reduce mining costs during the next few months, and as a yield of 8 dwts. per ton or thereabouts can confidently be expected for some considerable time to come it will be easily understood that the profit-earning potentialities of the mine quite apart from any question of increasing the equipment, which will no doubt be considered in the not far distant future, are very great indeed.

MODDER DEEP.

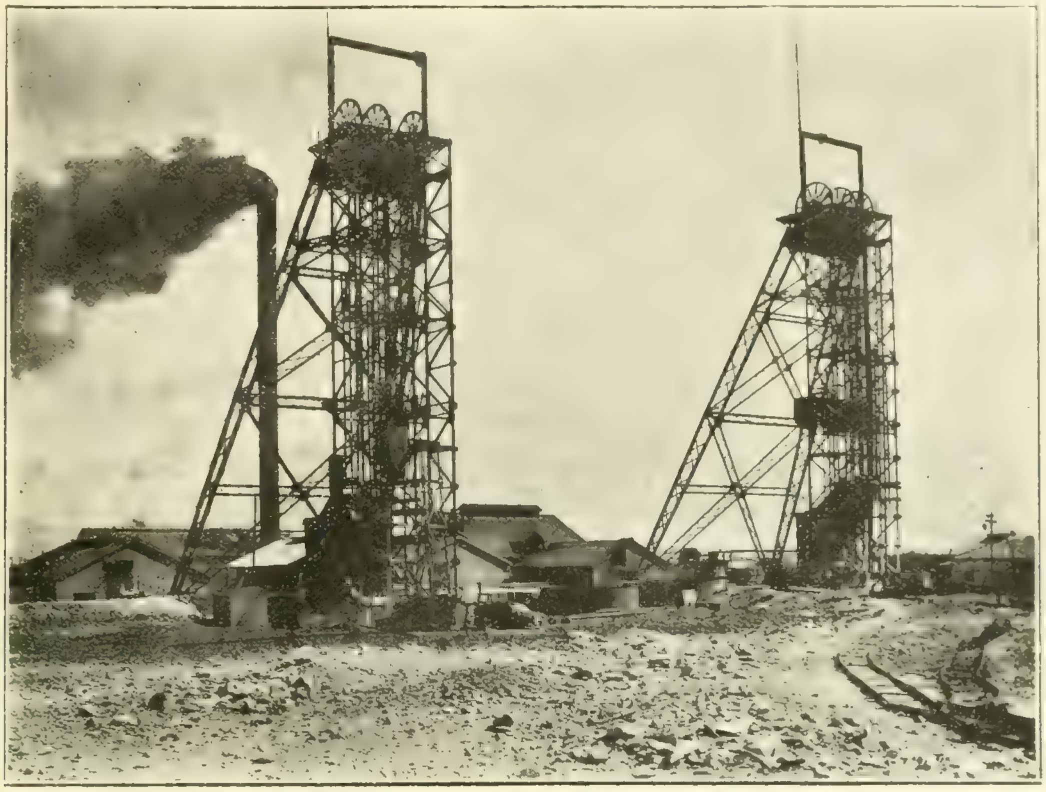
Development in the Modder Deep Levels mine continues to disclose excellent values and widths at all points, and there can now be no manner of doubt that this, too, is going to prove itself to be a highly profitable proposition. There are now standing developed in the mine something like a million and a quarter tons of ore, and it is important to note that the value of this averages 7½ dwts. per ton over the very substantial stoping width of 6 feet. It is anticipated that a mill of 30,000 tons per month capacity will be at work on the property at the end of the year. At the present rate of development there will be blocked out in the mine about 2½ million tons of ore when milling commences, so that the Modder Deep Levels Company will commence crushing under exceedingly favourable auspices. The heavy portions of the milling equipment will commence to arrive on the property in a few weeks time and by the end of the current year the 60 stamp mill, which, by the way, will, like the Van Ryn Deep and Consolidated Langlaagte, have one tube mill for each battery of 10 stamps, will be ready. Meanwhile work is being pushed ahead in connection with excavations, transformer houses, etc.

STATE MINES.

Another mine of the future, although it has not as yet given the promise of profitability expressed by developments in the Van Ryn Deep and Modder Deep Levels, is the Government Gold Mining Areas (Modderfontein) Consolidated, or as it is better known, the State Mines, will be crushing by the end of this year. Excavation and preliminary construction work has reached an advanced stage now, and in a little while the erection of the heavy milling equipment, which will have an initial crushing and treatment capacity of 50,000 tons per month, will be commenced. Although the ground so far exploited cannot be characterised as high grade, stretches of very good ore have been opened up which should serve to "sweeten up" the grade of this large mine as a whole. In any case this company will be contributing a substantial quota to the Rand's output in about twelve months' time, and the returns secured should serve to direct further attention to the whole Far East Rand area.

Daggafontein.

A further event which will be of great importance not only to that section of the Witwatersrand now under discussion but to the field as a whole, will be the striking of the reef in the shaft of the Daggafontein Company before the end of this year. The shaft has now reached a depth of 3,000 feet, and it is expected that the reef will be encountered at a depth of 3,500 feet. Some little time, however, must elapse before this latter depth is reached, as the shaft is now in very hard diabase and sinking is proceeding at a comparatively slow rate—less than 100 feet per month. At this juncture it would be absurd to venture any predictions as to what developments this shaft is likely to initiate, but it may here be remarked that the situation of the farm is to the south-east of the well-known Geduld area. The area in all is some 9,238 acres. At bore No. 1, north-east corner, the Van Ryn series was intersected at depth 3,275 ft., 5½ inches assaying 1 oz. In joint Grootvlei bore No. 2 to north of the property the Van Ryn series was encountered in 1905. Omitting the quartzite parting, which in working would be sorted out, the remainder of the reef averaged approximately 7 dwts. over 32·3 inches. The leaders were also assayed, but contained no gold, with the exception of the top one, which contained a trace. After survey the actual depth, allowing for deflection, was estimated to be 4,880 feet, and, on the reef width being corrected to dip and deflection, the width of 32·3 inches works out at about 28 inches. Bore 3, south-east corner of property, sunk jointly with others, intersected Kimberley Reef at 2,117 feet, 8½ inches of ore assaying 19 dwts. It was discontinued at 2,627 feet. Bore 5 intersected Kimberley Reef at 1,946 feet, showing about 31¼ dwts. over 2½ inches. Continued down it entered a massive body of diabase, and was discontinued. Bore 6, just to the north of bore 3 at south-east corner of the farm, was reported November, 1905, to have encountered the Van Ryn series at about 3,100 feet depth, showing 11 dwts. 9 grs. over 23¼ inches. Bore 7, midway between bores 1 and 6, at 2,102 feet met Kimberley Reef—7 inches, 18 dwts. February, 1908, Van Ryn Reef series was encountered at depth 3,561 feet, showing 24·58 dwts. over 6 inches. The No. 1 shaft is near this bore, and needless to state the reef assays and widths in this shaft will be noted with very keen interest.



Headgears of Twin Shafts at Modder Deep Levels.

The Premier Mine.

According to the monthly report, the Labour Bureau was requested on January 16 to recommend competent carpenters, electricians, fitters and overseers for employment at the Premier Mine, where the mechanics were reported to have come out on strike. All vacancies on the mine were filled up within three days. It is stated, further, that vacancies on the mine were filled by burghers on demobilisation of the Defence Force, who offered their services as gangers, and for similar employment, to the mine management.

Glencairn Main Reef.

The quantity of ore crushed at the Glencairn Main Reef during the quarter ended the 31st of December was 1,[illegible] tons less than that for the previous quarter, and as the grade and costs showed little alteration, the working profit was reduced by £297. It was found possible, however, to treat a larger quantity of accumulated slime, and with the increased revenue from this source the gross profit was higher by £126 than for the preceding three months. Number of feet driven, etc. (exclusive of stopes), 596; ore developed (milling basis), 34,710 tons; ore mined (less waste sorted out), 57,548 tons; yield in fine gold from mill and cyanide works, 9,951·045 ozs.; yield in fine gold per ton milled, 3,464 dwts.; working profit £5,742 11s. 10d.; gross profit, £7,944 12s. 6d.

PETROLEUM PROSPECTS IN THE UNION.

A Review of Mr. Cunningham Craig's Report—The Vegetable Origin Theory—Simple Character of the Problem Proposed.

[By J. E. Mills Davies.]

The report of Mr. E. H. Cunningham Craig on "Petroleum Prospects in the Union of South Africa," which has recently been published by the Government, has a special interest for geologists in the fact that its findings are largely based upon theoretical considerations. The question of the origin of petroleum is one that has exercised the minds of geologists and chemists for a great many years, and whatever may be the prevailing opinion upon the subject at the present moment it is certain that less than two years ago the views regarding it were generally of a tentative and inconclusive kind. The discussions which took place at several meetings of the Institution of Mining and Metallurgy in London, when some papers upon the origin of petroleum and the conditions surrounding its occurrence were read by Messrs. Eugene Coste and A. Beeby Thompson, afford sufficient proof of this statement, and a great deal of other evidence of the same nature could easily be adduced if necessary. An exception must be made in favour of Mr. Coste, to whose views the term tentative does certainly not apply, inasmuch as this geologist appeared to have not the smallest doubt as to the truth of his own inorganic theory and the error of every other. In a book on "Petroleum Mining and Oil Field Development," by Mr. A. Beeby Thompson, which was published in 1910, the author says:—"The problem of the origin of petroleum has been the subject of scientific controversy for years, and few chemists or geologists of distinction have not been led into an expression of views at some time or another. The problem is still unsolved to the satisfaction of scientists, although the more active development of oil fields and the increased scientific interest in petroleum has led to a much clearer perception of the changes resulting in the formation of liquid hydrocarbons." He adds:—"The organic origin of petroleum is now almost universally accepted, although there is no general agreement as to its origin from vegetable or animal matter, or whether it was produced in the beds in which it is now found or introduced subsequently by a process of distillation of underlying seams of organic matter. It is quite likely that petroleum has a dual origin, and is sometimes formed from one and sometimes from another source, and it is quite certain that no single explanation will afford an explanation for the formation of petroleum in all regions. Similarly some supplies of petroleum may have an adventitious origin, and others an indigenous one." American geologists have naturally given a great deal of attention to the subject, particularly during the past few years, and in that excellent publication, "Economic Geology," of July, 1911, in a historical review of theories advanced by American geologists to account for the origin and accumulation of oil, Marius R. Campbell refers to the organic and inorganic hypotheses. Speaking of the scarcity of reliable evidence for the support of either view, he remarks:—"Fortunately, there is one place in this country where it has been possible practically to solve the question of origin, and since this is such a great exception and so important of itself, the writer will be pardoned if he goes rather fully into a description of the conditions." He proceeds to relate how the studies of certain geologists of the Geological Survey of the United States "have shown that without much doubt foraminiferal and diatomaceous shale is the source of the California oil."

Mr. Cunningham Craig's Theory.

About the middle of 1912, or perhaps a little later, there appeared a most interesting little book by Mr. E. H. Cunningham Craig, the expert engaged by the Government to investigate the supposed petroleum resources of the Union of South Africa. It contains an introduction by Sir Boverton Redwood, Bart., an admitted authority of the highest degree, but although Mr. Cunningham Craig's book brings forward the organic theory of petroleum exclusively, and limits it definitely and emphatically to a certain class of organic material, vegetable remains, namely, the introductory paragraphs carefully avoid any expression of personal opinion on the part of a scientist who might reasonably be supposed to have studied Mr. Craig's argument very fully and critically. All that Sir Boverton Redwood has to observe upon the most important, indeed, the all important, feature of the book is that—"The earlier portion of the work, as the author himself admits, deals with many theoretical questions of a controversial character, and it is not to be expected, nor does he himself anticipate, that his strongly expressed opinions will in all cases be accepted . . ." As the author of the work himself observes: "The question of origin, in fact, absorbs and includes nearly every other question as to the occurrence, distribution, and winning of oil." It was with this question definitely settled in his own mind that Mr. Cunningham Craig began his investigations into the petroleum prospects of the Union, and this fact, as I have already pointed out, makes the report one of special interest to those who have studied, to any great extent, the subject with which it deals. The Cunningham Craig theory, as it may be called, in virtue of the prominence and standing given to it by this geologist, is thus briefly enunciated by its author:—"Petroleum is formed from the remains of terrestrial vegetation, accumulated in clays, sands, or actual beds (which under other conditions would develop into carbonaceous shales, sandstones, and seams of coal or lignite), by natural processes which can be not only reproduced in the laboratory, but can also be proved to have taken place in the past and are taking place at the present day." The evidence in support of this view, which is given in "Oil Finding," as Mr. Cunningham Craig's book is entitled, appears to be overwhelmingly convincing. A similar judgment cannot, as far as I am aware, be passed upon the evidence adduced in favour of other theories, although, in view of the data furnished regarding the foraminiferal and diatomaceous shale of the California oilfield, referred to above, it would seem that the vegetable origin hypothesis cannot be held to be of universal application, and that parallel organic theories are susceptible of fruitful development. With his vegetable theory and its accompanying conditions clearly established in his mind it was not as difficult as it would otherwise have been for Mr. Cunningham Craig to map out his tour of enquiry and collect his facts. A great deal of objection has been made to the comparative shortness of his stay in the country, but it must be remembered that the main structural and stratigraphical features of the geology of South Africa were already recorded and mapped, and it only remained to examine the strata broadly with regard to their conformity or otherwise with the conditions laid down in the theory. The problem as set down, leaving out of the question, as it did, the more complex and hypothetically barren horizons below the Karroo system, was not by any means of an intricate kind, and did not demand any great length of time for the working out of the approximate solution which was asked for.

(To be continued.)

A new tin syndicate has been formed in Pietersburg—the Platdoorn Tin Syndicate—to develop claims on the Olifants River tin belt. Interest in these fields continues unabated, and exceptional activity will be in evidence during the coming winter.

THE KNIGHTS' NEW TUBE MILL PLANT.

Equipment Working Satisfactorily—Residues Reduced by ·225 dwts. per Ton Since the Plant Started Up.

THE work achieved by the new tube mill plant of the Witwatersrand, or Knights G.M. Co., affords a very good example of the benefits that may be derived from fine grinding. The new plant comprises five tube mills, each 16 ft. 6 ins. by 6 ft. in diameter (or of similar dimensions to the tube mills at the Van Ryn Deep and Consolidated Langlaagte), fitted with Schmidt feeders and Osborne liners. They are electrically operated. The drive end is the discharge end in the case of each mill. Accessary portions of the new equipment are Caldecott classifying cones arranged above the tube mills and Allen sand pumps with launders, pipes, etc. Adjacent to the tube mill house is the plate house, where twenty stationary plates—four to each tube mill—have been erected. The slime plant has been added to by two collecting, one clarifying, and four treatment tanks and all necessary pipes and launders, etc. In December four of the five tube mills were at work supplementing 220 stamps and 38,830 tons were milled during 26¾ days, or an average of 6·6 tons per stamp per diem. The full equipment of 245 stamps and tube mills is, however, now capable of crushing close on 45,000 tons per month. The tube mill plant was erected at this property not so much with a view to increasing tonnage as to improving the extraction. A good proportion of the Knights' equipment dates from the very earliest days of the Witwatersrand. Some few months ago renovation of the mill was commenced, the stamps being renewed in batteries of ten at a time. With an average of about 218 heads dropping the Knights mill had previous to erection of tube mills crushed up to 41,000 tons in a month with 600 mesh screening, but normal capacity, given a full complement of labour, could not be placed at over 40,000 with 600 mesh screening in the mortar boxes. During the two months preceding erection of tubes 800 screening was employed, and the residues in September were estimated to contain ·487 dwt. fine gold per ton, as against over ·5 dwt. per ton when 600 mesh was used.

THE QUESTION OF EXTRACTION.

In order to realise the total loss to the company per month represented by ·487 dwt. going into residues for each ton milled it may be remarked that in September gold worth £3,800 was discharged on to the dump. It will thus be evident there was room for improvement in regard to extraction at the Witwatersrand Company's plant, and it was for this primary reason that erection of tube mills and additional slime vats was decided on some little time ago. It was expected that when the new fine grinding installation was fully at work residues would be reduced to ·25 dwt. per ton value. In other words the loss represented by gold sent to the dump would be halved. An increase in the quantity of ore milled per month would be practicable although the additional tonnage crushed would have to be carefully considered in relation to screening and extraction. However, under normal circumstances the new plant should admit of about 45,000 tons per month being milled. Not only does the running of the new tube mill equipment thus mean an improved percentage of recovery but it will also mean the crushing of another 5,000 tons per month when sufficient native labour is available, and this in turn should result in a further economy in regard to working expenses, although it must be admitted costs have been reduced to a very low and creditable level indeed at the Knights.

THE FUTURE PROSPECTS.

The actual results secured have been extremely satisfactory. Whereas in September last residues were ·487 dwt. fine gold per ton they had been reduced to ·262 dwt. per ton in the December quarter. This represents a gain in the direction of increased recovery of gold of ·225 dwt., or roughly one shilling per ton. Milling costs during the months of October, November and December were increased by about 6d. per ton in consequence of the starting up of the new plant, but despite this the extra recovery means an additional profit of 6d. per ton as a direct consequence of the employment of tube mills. Moreover, it is expected that residues will be still further reduced, and with an adequate complement of natives working charges in all departments would be still further lowered. There is thus every reason for anticipating a further increase in the profits of the Knights Company in the near future.

IMPROVING PROSPECTS AT THE BANTJES.

Development Affected by Shortage of Native Labour—Improved Yield.

AT the Bantjes in the three months ended December 31 last, the continued and acute shortage of native labour again adversely affected the progress of development work, and the footage was 1,496 feet lower than that of the previous quarter. Towards the end of December the position improved slightly, and the 9th, 10th, 11th and 12th drives at the Central Shaft were re-started, and it is hoped to start up all the lower level drives shortly, and a considerably improved footage can be looked for. Machines have again been extensively used for stoping purposes, 38 per cent. of the ore stoped in December was obtained by this method as against 26·9 per cent. for September and 8 per cent. for June. The working profit for the quarter was lower by £4,238, the yield showing a decrease of 3s. 4d. and the costs one of 1s. 10d. per ton milled, whilst the tonnage milled was higher by 3,610 tons. The yield was influenced by the increased use of machines in stopes and by the large tonnage sent to the mills from the development dump, and to the low sorting during October. During November and December all ore milled was hoisted from the mine, and the surface sorting increased and the yield improved. The net expenditure on capital account has been £126, and all work authorised by the Board is now completed. On 8th January a strike occurred amongst the railway servants of the Government of the Union of South Africa, and on 13th January a general strike was declared of the members of the Trades Unions afiliated to the Federation of Trades. About 50 per cent. of underground employees and 33 per cent. of the men in the workshops went out on strike. The whole of the staff, engine drivers, reduction works and general surface employees remained loyal to the company, and with this force at his command the manager was able to keep the native workers fully employed. The tonnage milled for the first eighteen days of the month is 1,863 tons less than for the similar period in December. Development operations were suspended for a few days, but have now been resumed, and the position at the mine is again normal. The property was protected by Government troops, and no damage was sustained. An interim dividend (No. 4) of 2½ per cent. was declared on 12th December, 1913, for the half-year ending 31st December, 1913, and will be payable on or about 4th February, 1914, from the Head and London offices, to shareholders registered on the company's books at 31st December, 1913. Holders of share warrants will receive payment of coupon No. 4, attached thereto, on presentation at the London office of the company.

"T.C.L." MINING AND PROSPECTING PROGRESS.

Points from Quarterly Report on "Outside" Mining Interests.

In the course of the quarterly report of the "T.C.L." Co. to the 31st December, 1913, appears the following *inter alia*:—

Witfontein No. 371, District Waterberg.—A small amount of development has been done, mostly stope development to fully expose the form of the ore body; this is not yet completed. Shortage of labour considerably hampered operations. More encouraging values are now being disclosed in depth. The tonnage of ore hauled from 88 feet level was 805, whereof 528 tons have been sampled to date, showing an average value of 2·4 per cent. of 70 per cent. tin concentrates. The remaining 277 tons recovered during December have not yet been sampled.

Mutue Fides No. 1844, District Waterberg.—Development footage for the quarter amounted to 78 feet, and 33·5 tons containing 17 per cent. of 70 per cent. tin concentrates have been recovered. The small amount of mining done is due to shortage of native labour, which only started to come in again at the end of December. The prospects are still promising. Boring for water has been in progress, but the bore had not at the end of December attained the depth at which water is expected. to be found.

Groenfontein Tin Mine.—The footage for the quarter has been 700 feet, 188 feet of which were profitable, 502 feet development, and 10 feet prospecting. Five stamps ran 47·73 days, crushing 1,307 tons of ore, producing 103·947 short tons of concentrates, alluvial concentrates produced 21·024 short tons, equivalent to a total for the quarter of 124·971 tons of 70 per cent. concentrates. Of this total, 95·6 tons came from an ore occurrence discovered by the hydraulicing operations and known as the Giant Workings from which 197·19 tons of 70 per cent. concentrates have already been shipped during the last seven months, and the working faces of which still show good tin. Exploratory work has been continued in the alluvial deposit in the Zaaiplaats Valley. Working operations have, however, been considerably hampered during the quarter owing to acute scarcity of native labour and of water. The outlook for the immediate future is promising.

Dientje No. 552, District Lydenburg.—Prospecting has so far not disclosed any profitable values over any extent of reef. Prospecting is still proceeding.

Montrose Prospect, Barberton District.—In sinking to the second level, a larger influx of water was met than could be dealt with by hand appliances and work has therefore been suspended.

Mining Interests held by Company.

Zaaiplaats Lease.—Development has had to be restricted owing to the serious shortage of native labour. The development faces, however, look promising.

Rietfontein (T.C.L.), Limited.—580 feet of development have been done during the quarter. Ore mined, 2,540 tons of an average value of 16·5 dwts. per ton, of which 2,427 tons were milled. Two Nissen stamps ran 53·06 days, with a duty of 22·87 tons per stamp per day. The tube mill ran 53·38 days. 908·200 fine ounces of gold were recovered, equal to 7·48 dwts. recovery per ton. The quarter's operations resulted in a loss of £1,025 due to extraordinary expenditure of £700 on quarters, plant, and metallurgical tests, and to the unsatisfactory recovery from the ore (which had become very refractory), with the plant in its existing form. The mill was in consequence closed down on 6th December. Alterations to the plant are now being carried out, and it is expected to restart crushing in March, when an improved recovery is expected. Development is being pushed ahead in the meantime and good values are still being exposed.

Fairview (T.C.L.), Limited.—505 feet of development footage have been done during the quarter, 3,739 tons mined, 4,820 tons milled (of which 1,111 tons were drawn from dumps), and 4,820 tons treated. Two Nissen stamps ran 71·994 days with a duty of 33·4 tons per stamp per day. The tube mill ran 72·348 days. 2,138·354 fine ounces of gold have been recovered, equal to 8·87 dwts. per ton, showing a profit of £3,368. A considerable amount of gold remained in the zinc boxes after the December clean up. The working of the plant has been satisfactory. Development on the second level has disclosed good values.

Marico Zinc Mines.—All development has been stopped, but prospecting on another deposit in the neighbourhood has been continued with encouraging results. Five farms in the neighbourhood held under option have been relinquished after a careful prospecting examination.

Swaziland Tin, Limited.—84·715 long tons of concentrates averaging 71·1 per cent. metallic tin have been produced during the quarter, as against 58·267 long tons for the corresponding period of last year. The estimated profit for the quarter was £2,413, notwithstanding the fall in the price of tin and the scarcity of native labour. It is anticipated that the output will be increased in the immediate future, and if the recent recovery in the price of tin is maintained considerably improved profits should be made.

Barberton Venture.—Prospecting has been continued during the quarter and work is now being concentrated on some promising reefs which have been exposed.

WHAT THE RAND IS "LOSING" IN TONNAGE.

Capacity for Another Six Million Tons per Year—Some Further Facts and Figures for the Sunday Observance Commission.

Mr. R. C. Warriner, the General Manager of the Crown Mines, Ltd., in his reply to the discussion on his noteworthy paper, "Centralization at the Crown Mines," at the monthly meeting of the S.A. Institute of Engineers last Saturday night, made a point of the reduction that had been effected in working costs and stated that should the labour position improve sufficiently to permit the Crown Mines to mill their maximum tonnage the hope for a still further reduction in the cost of production per ton might be realised. This is a very cautious statement. No doubt the guarded nature of the remark is in large measure due to the fact that the increase of milling plants has not been attended by such marked and automatic lowering of working costs as was hoped for a few years ago. Circumstances over which the industry has little control and conditions unforeseen a year or two ago are to be held responsible, but however patent it may be that hopes in regard to the lowering of operating costs have not been realised, it can scarcely be disputed that if it were possible to run the various mills at their full capacity there would be substantial economy in the cost of production. It is here quite unnecessary to labour the point that a lesser cost of working would mean a tremendous expansion of operations. Ore at present beyond the bounds of payability would become capable of profitable treatment, and it need hardly be repeated here that on the working of the low grade ores of the Rand the future prosperity of South Africa largely depends. The following table has been compiled with a view to showing how great is the field for expansion of milling operations at the present time.

Figures for the Whole Reef.

The figures given hereunder have been abstracted from the Chamber of Mines' analysis sheet for December, and they show the number of idle stamps and days "lost"—it being assumed that in a normal 31-day month there should, provided sufficient labour was available, be ability to operate the full equipment for 27 days in the month.

Company.	Stamps Working.	Stps. Idle.	Days Lost.	Tonnage Crushed.	Capacity of Plant.	Tonnage Lost.
Aurora West ...	80	—	—	14,237	15,000	763
Bantjes Cons. ...	100	—	4·24	22,000	25,000	3,000
Brakpan	140	20	3·79	46,350	70,000	23,650
City Deep	150	44	4·44	37,800	65,000	27,200
City and Suburban	150	10	·28	25,150	27,000	1,850
Cons. Langlaagte...	100	20	·57	40,600	45,000	4,400
Cons. Main Reef ...	90	30	—	18,310	25,000	6,690
Crown Mines ...	660	175	3·65	165,000	230,000	65,000
Durban Roodepoort	90	—	—	14,091	—	—
Durban Rood. Dp.	100	—	—	22,400	—	—
East Rand Prop....	820	—	8·70	127,600	200,000	72,400
Ferreira Deep ...	245	35	—	54,550	65,000	10,450
Geduld Proprietary	60	—	—	19,750	24,000	4,250
Geldenhuis Deep...	300	—	6·13	43,600	60,000	16,400
Ginsberg	80	—	—	14,359	—	—
Glencairn	160	—	1·26	19,850	—	—
Knight Central ...	90	30	·11	21,830	30,000	8,170
Knights Deep ...	400	—	3·15	74,800	105,000	30,200
Langlaagte Estate	200	—	—	49,114	—	—
Luipaardsvlei Est...	60	—	—	18,160	20,000	1,840
Main Reef West ...	90	30	—	17,700	25,000	7,300
May Consolidated...	100	—	1·6	11,400	—	—
Meyer and Charlton	75	—	—	14,993	—	—
Modder B.	80	—	—	31,000	33,000	2,000
New Goch	120	—	·11	28,020	—	—
New Heriot	70	—	12·8	6,300	12,000	5,700
New Kleinfontein...	200	20	—	49,700	50,000	300
New Modderfontein	180	—	5·45	38,650	50,000	11,350
New Primrose ...	160	—	—	25,000	—	—
New Rietfontein ...	120	—	2·46	14,500	—	—
New Unified ...	60	—	—	13,000	—	—
Nourse Mines ...	260	—	7·68	41,000	55,000	14,000
Princess Estate ...	60	50	—	23,000	—	—
Randfontein Cen...	875	125	4·67	181,914	240,000	58,086
Robinson	250	—	—	53,100	—	-
Robinson Deep ...	105	195	—	49,000	60,000	11,000
Roodepoort U.M.R.	50	50	·92	22,914	50,000	27,086
Rose Deep	300	—	1·75	59,600	64,000	4,400
Simmer and Jack...	320	—	—	68,500	75,000	6,500
Simmer Deep ...	180	—	3·14	57,150	—	—
Van Ryn	140	20	—	39,000	40,000	1,000
Van Ryn Deep ...	80	—	2·83	37,050	40,000	2,950
Village Deep ...	180	—	—	44,800	52,000	7,200
Village Main ...	220	—	5·38	33,700	40,000	6,300
Vogelstruis	70	10	†	11,714	—	
West Rand Central	20	—	8·5	1,924	—	—
Witwatersrand ...	220	5	·28	38,830	45,000	6,170
Wit. Deep	245	—	—	44,570	-	-
Wolhuter	120	—	—	30,800	—	—

† Milled 31 days.

It will be seen from the above that the aggregate tonnage lost by these mines, that is to say the additional amount of ore that would have been milled had the full equipments have been operated for a full running time period of 27 days is 447,605 tons. Since each ton of ore milled on the Rand in December yielded an average of 27s. 0d., cost 17s. 10d. to mine, mill and treat, and yielded a profit of 9s. 10d., it can easily be calculated what the direct benefit to the industry would be were the batteries milling at the full capacities noted above. And apart from this direct benefit there is the further vastly important consideration that milling on the larger basis would result in lesser working expenses, and this would naturally result in the transfer of large tonnages of low grade ore in every mine from the unprofitable to the profitable side of the industrial ledger. In the above table numerous companies possessed of comparatively small equipments are shown as having worked up to the full capacity of their equipments, whereas in point of fact these mines, too, could no doubt "squeeze out" a little extra tonnage. It is recognised that some of the older outcrop ventures mentioned in the foregoing schedule have comparatively little ore left, but from the above calculations it seems quite reasonable to infer that under ideal conditions in regard to labour the existing milling equipments could crush another half a million tons per month, or in other words could augment the monthly tonnage at present crushed by 25 per cent. And this quite apart from any question of extending equipments.

The Sunday Milling Question.

It should be noted in the above that in the cases of the Consolidated Langlaagte and Van Ryn Deep the maximum milling time is fixed at 24 days, as the mills of these companies come under the Sunday Observances Act. Reference to the question of Sunday Observance, in so far as it affects milling on the Witwatersrand, tempts us to remark that the figures given in the foregoing may by some be construed to confirm the view expressed by some members of the Commission that it would be no real hardship on the industry to forego milling on the seventh day. But from our point of view the figures have a very different significance. They point to the fact that with full labour complements and when running full equipments for not more than 27 days in the month the Rand could mill an extra six million tons per annum. Extra running time would, of course, mean further tonnage and an attendant further decrease in working expenditure. There is a very reasonable hope that in about three years' time the native labour supply will have improved so much that something closely approaching to this ideal will be realised. But in just three years' time the Sunday Observance Commissioners propose that milling operations shall be curtailed! We dealt with this matter at some length last week, and will here merely remark that it is all very well for these Commissioners to say that the four or five Sabbaths can be employed in repair work and the weekdays utilised in crushing. Apart from the fact elucidated by the Commission that repair work often calls for more labour than the ordinary routine of milling it should be recognised that repair work cannot be so ordered that it shall only become necessary on the Sabbath. Certain renovation work not calling for immediate attention might be postponed until then, but surely the members of the Commission should know that stamp stems may not see fit to remain in order throughout the week and suddenly break late on Saturday night!

Van Ryn Deep.

The operations for the quarter ended 31st of December at the Van Ryn Deep have yielded very satisfactory results. There has been a steady increase in the quantity of ore milled, and there has also been a notable improvement in the grade. As compared with the previous quarter, working costs have been reduced by a shilling per ton, and it is hoped that a further reduction will be effected. The total gross profit shows an increase of £45,038. Arrangements are being made for the resumption of shaft sinking. The development of the mine has produced very gratifying results, and the ore reserves have been increased by 32,459 tons; 1,385 feet were sampled, of which 1,349 feet were payable and of an average value of 24·8 dwts. over 20 inches, and 36 feet unpayable at 33 dwts. over three inches. The surface equipment was practically completed at the end of the year, and capital expenditure will now be reduced to normal proportions. Number of feet driven, etc., 2,821; ore developed (milling basis), 139,129 tons; ore mined (less waste), 106,670 tons; total yield, 41,605.642 ozs.; yield in fine gold per ton milled, 7.872 dwts.; working profit, £74,739 19s. 4d.; total gross profit, £76,594 13s. 2d.; expenditure on capital account, £13,111 7s. 11d.

THE DECLINE OF THE RAND.—III.

A Critical Review of Present Day Position and Prospects of the Industry.

[By H. S. Denny.]

In a comparison with other goldfields of the world the Rand, considered as a whole, has no parallel, either in the nature of its formation or its magnitude. True, auriferous conglomerate occurs in several other localities in South Africa and also in the United States, but only very limited areas have proved capable of being worked at a profit. The mines of the Rand, with the exception of the main east and west breaks, are divided merely by boundary lines, and the Rand may be looked upon as one immense mine, arranged for division of ownership and convenience of working into a number of small units. At Butte there is something of the sort on a smaller scale in the copper mines; and at Pachuca and other places in Mexico, in silver mines; and at Kalgoorlie in gold mines; but there is nothing really comparable with the Rand. Out of the first 60 gold mines of the world over 30 are on the Rand. I have been among those who have, in the past, pointed out the advantages of having the mines tied one to the other like a string of beads. The obvious advantages are so obvious that to think anything different at this stage seems rather feeble. But, frankly, I do not feel quite so sure about it, not that I dispute the obvious advantages at all—they are actual without a doubt—but I think that some of the disadvantages that are not so obvious may be just as material or even more so. When two engineers are left to battle by themselves with a given problem, it is possible that they both may arrive at some original solution, but if the two work together on it, the weaker or the less industrious one may be tempted to lean on the other, or, for other reasons, one of them may utterly fail where, if he had been left with the responsibility, he might have accomplished something. A tour of inspection along the mines of the Rand must impress even a casual observer with the fact that there is a faithful reproduction of method as between mine and mine. In fact, duplication everywhere is so patent that the observer could not be surprised to learn that the design had emanated from a very few individuals. This in itself might not always be a bad thing, and assuming that the responsible men in charge of the laying out of the development and equipment were invariably right, then there could be no question as to the benefits of the system. But if these men should have been obstinately wedded for sentimental reasons to methods or designs that, from a practical aspect, were oposed to the best knowledge available in other parts of the world, persistence in such an idea might conceivably cause an enormous amount of useless expenditure. Furthermore, the policy of leaving the responsibility of these things in the hands of a few is apt to lead to the stultification of ideas on the part of subordinate engineers.

ENGINEERING *VERSUS* PROFITS.

There can be no doubt that a great deal of excellent work has been achieved on the Rand from the engineering standpoint, but it cannot be denied that the expenditure on capital account has in many cases grown out of all proportion to the real requirements, and to some extent the proximity of the mines to each other is responsible for this. While the metallurgists of the Rand have been spending millions in covering large areas with heavy, expensive and cumbersome percolation cyanide plants, and decantation slime plants, other countries have been able successfully to evolve, under much more trying conditions, and often with meagre financial resources, new systems of treatment on more complicated ores even with great profit. The Rand, since the introduction of the cyanide process in the early days, has done practically nothing to add to the glory of engineering achievments. It has rather followed a policy of sticking to the one old principle and developing the details of that principle to the last limit. In my opinion, and I share this with a great many other engineers, the Rand might have saved itself a large amount of capital outlay if it had adopted immediately after the war, for the treatment of its unusually simple clean ores what has been accepted all the world over in the last ten years, namely, the one-product one-treatment method. The real truth of this matter is obscured by the fact that metallurgical working costs do not on the Rand take into account the amortization of capital expenditure, and, therefore, no matter how absurdly high that expenditure may have been, the real meaning of it has not been realised. It would be safe, however, to say that there are instances on the Rand in which, if this principle be applied, the redemption figure per ton treated would amount to almost as much as the stated figure of "working cost," and it is just as real a figure, although not shown, as the other one. If the mines of the Rand had been more isolated, individual effort would have been greater, competition keener, methods more original, expense much less, and profit correspondingly much greater. I am making no personal attack in these remarks, being in many respects perhaps as responsible, and therefore as blameworthy as many others, but I put it down to a system that could only have arisen out of the proximity of the mines. In heading these notes "The Decline of the Rand," it must not be inferred that I am pointing to any precipitous ending of the industry; I believe firmly, as before stated, that the Rand will die very hard, and, for many many years to come, it will hold the place of pride in the world's gold production. It is not possible, of course, to foresee what new methods may arise in the treatment of ores to lower the cost of production, but it may be taken for certain that as the margin between expenditure and revenue becomes narrower, so will the effort to keep them apart increase, and ways and means that are not known to-day will be born of necessity to keep the industry still alive. It is fashionable to talk about the possibility of treating the untold millions of tons of ore lying in the Kimberley Reef series, and it is a fact that even up to now this series has been able to produce quite an appreciable tonnage of pay-ore. There is always, however, a limit to what is feasible under given conditions, and the one great limiting factor of the Rand is the comparatively narrow average stopeable width. To get tonnage on narrow ore bodies means extensive development, and costly mining, and even with heavy reductions in the cost of materials, such as explosives and so forth, one cannot at present see that it can ever amount to enough to make 2 or 3 dwt. ore cover all expenditure, and return a reasonable interest on the money invested. Failing the discovery of new deposits, therefore, the end, though not in sight, is within the limits of approximate calculation even after liberally discounting for new unforeseen favourable conditions.

DECLINE IN SPECULATION.

Probably the worst feature of the decline is that speculative interest gradually dies out, and it is difficult to interest the public sufficiently to get their purse-strings loosened for new capital requirements. With the channels of fresh capital dry, the encouragement to lay out money on attempting new expedients for the reduction of working costs is little, and those now in financial control will probably be inclined rather to keep down all new capital expenditure to the narrowest limits, leaving the bulk of the present producing mines to end their lives with the barest maintenance of their existing equipment. This, of course, is always assuming, as before stated, that there is no new and startling discovery of some unforeseen nature, favourably affecting the question of working cost, because, after all, that is the crux of the whole of the problem now facing the Rand. My summarised reading of the indications is that the gross output, like the dividends, will soon begin to decrease, and the drop will be steady, though sure. Finally, the Rand industry is like a great man who even in his declining years has still stood head and shoulders above everybody.—In the *Mining and Scientific Press*.

Sub Nigel.

The following, showing the results of recent development work on the property of the Sub-Nigel, Ltd., has been sent to us for publication: In order to locate the longitudinal dyke intersected in D shaft, a borehole was put in on the fourteenth level in B shaft at a point 90ft. west of the line of C shaft. This borehole has now been advanced 500ft. without encountering the dyke, thus affording evidence that the direction of this dyke, as shown in D shaft, is not continued. It would, therefore, appear that on the outcrop side of the dyke there is a considerably larger claim area than could be calculated on from the evidence previously available, and that C incline shaft might be continued to the neighbourhad of the boundary of the property before encountering this dyke. The directors have, therefore, authorised the sinking of C incline shaft to be continued with the object of making that shaft the principal hauling shaft of the eastern portion of the mine, and which, owing to its position, will enable ore from B, C and D shaft sections to be delivered to the mill without surface haulage. On the western section of the mine, the west drive from the bottom of E incline shaft has been advanced a distance of 430ft., the first 310 feet of which disclosed reef of low grade, and the last 120ft. gave an average reef value of 19.2 dwt. over 23.7 in. At the same time the east drive from the bottom of the same shaft, E, was advanced for a distance of 415 ft., which disclosed in the first 350 ft. unprofitable reef, but in the last 65 ft. the reef exposed averaged 15.5 dwt. over 13.4 in. This evidence of the existence of payable ore in the large western section of this mine offers encouragement to proceed with development work, and the same is being undertaken as circumstances permit. In view of the improved position at the mine, it is proposed that the crushing capacity of the reduction plant should be increased from the present nominal capacity of 4,500 tons per month to a nominal capacity of 8,000 tons per month, and plans for this increase and estimates of the cost of the same are now in course of preparation.

Sheba G.M. Co.

The secretaries write: We have received the following cable from our London office: "Board of directors have declared a dividend of 5 per cent. on account of current year, payable on the 17th March to the shareholders on the books 18th February."

THE DEARTH OF CAPITAL IN SOUTH AFRICA.

State Indebtedness to Britain—Municipal, Industrial, and Banking Capital—Suggestions for Increasing Inflow—"S.A. Mining Journal" and the Insurance Companies.

MR. D. P. MORGAN contributes an interesting article to the January number of the *Journal of the Institute of Bankers* on "South Africa's Capital." After remarking that the two countries of the old world to-day which supply practically the whole of the new capital asked for are Great Britain and France, he lays it down that so long as the credit of a new country is sound it should have no difficulty in normal times in securing from outside sources as much capital as it needs for legitimate enterprises, provided it is willing to pay the market price for loans. But just as it is "not good for a country to languish for want of capital, so it is a bad thing to import more than is necessary to promote healthy development. There have been periods in the history of South Africa when capital has come in at too great a pace; times of speculation, and of the growth of numerous bogus concerns, causing eventually the destruction of much of this imported capital. Such times have been usually followed by years of trade depression, and of contracted credit. Something similar has also happened in the case of other countries. It is hardly necessary to lay emphasis on the fact that if South Africa, during the last half-century, had had to rely on her own capital, not only would the development of the gold and diamond industries have been seriously impeded, but railways, telegraphs and telephones would not have been built, whilst the pastoral, agricultural and other industries would also have suffered. Now, in seeking some reliable estimate of South Africa's capital indebtedness to Great Britain, one is naturally reminded of the figures arrived at by Sir George Paish in December, 1910, and of the interesting paper published in *The Statist* during the same month. According to this authority, Great Britain's oversea investments amounted to £3,191,684,000, of which sum no less than £1,554,152,000 was invested in British Colonies and India, particulars of which are as follows:—

Canada and Newfoundland	£372,541,000
India and Ceylon	365.399.000
South Africa	351.368.000
Australia	301,521,000
New Zealand	78,529.000
West Africa	29,498,000
Straits Settlements, etc.	22,037,000
Miscellaneous Possessions	33,259.000

SOUTH AFRICA'S INDEBTEDNESS.

Among recipients other than British Colonies, the chief are: Argentine, £269,808,000; Brazil, £94,440,000; Mexico, £87,334,000; Chili, £46,375,000; and Japan, £53,705,000. South Africa stands high in the list as debtor to Great Britain, and it will therefore be of interest to know from the same authority the names of the undertakings which employ so vast a sum. The list is as follows:—Mines, £125,065,000; Government, £97,379,000; Municipal, £17,701,000; Railways, £9,354,000; Banks, £4,558,000; Commercial, etc., £7,024,000; Electric, etc., £3,667,000; Breweries, £3.065,000; Gas and Water, £1,339,000; Iron, Coal and Steel, £6.392,000; Rubber, £495,000; Tramways, £1,801,000; Financial, Land, etc., £73,363,000; Oil £165,000. As might have been expected, the mines have taken the lion's share, but other undertakings have absorbed considerable amounts. Now, seeing that South Africa's indebtedness to the Mother Country, in respect of capital, is placed in excess of that of Australia—a more advanced country with an incomparably larger white population—the existence of a scarcity of capital at the present time may sound anomalous. The fact, however, that South Africa can do with more capital than she is importing is a testimony to her powers of absorption." Proceeding, the writer goes on to examine the evidences that capital is coming into this country at a lesser rate than formerly. He proceeds: South Africa's share during the first nine months of the present year is larger than it has been since 1909, and it should not be forgotten that the Union Government has appeared on the market for a considerable sum this year. The amount raised by the South African mines has dwindled from £4,340,500 in 1909 to £2,411,000 in 1912, and to less than £750.000 for the first nine months of the present year. These facts do point to a certain falling off in the amount of capital imported into this country during recent years; and it is not improbable that the same circumstances which operate as a check on the imports of public capital have a similar effect on private capital imports. Numerous reasons might be adduced as an explanation of the present small imports of capital. One reason is that the Government, since Union, has not had occasion to resort to the London market so frequently as did the individual Governments prior to Union. Latterly, too, the South African Municipalities have shown a disposition to raise money locally, where formerly they resorted to London—an economical procedure from their point of view, but one which can hardly be looked upon as in the best interests of the country. Take, as an example, the year 1906—a year less prosperous than that of 1912, and when the dearth of capital was less felt—the South African Municipalities raised £7,386,200 on the London market, paying rather more than 4 per cent. for the same. Then again, the year 1907 was one of the worst during the depression; and yet the Cape Government appeared three times on the London market for a total of £4,000,000, while Natal appeared once for £1,000,000.

REASONS OF THE DEARTH.

The London money market has of late been more favourable to lenders than borrowers. The average Bank of England rate during the first half of 1913 was higher than it has been during the corresponding period for nearly 50 years. It is indeed difficult for any borrower whose credit is not high to raise money at all in London; and, in any event, the price paid for the loan will be more than formerly. Here, then, we get at the chief cause of the tendency on the part of Government, Municipalities and other bodies to float loans locally; and here, in fact, we touch one of the prime reasons of the present dearth of capital. Mr. Morgan proceeds to deal with the supposed re-exportation of capital formerly imported. He says: "If this tendency can be proved, it is of a serious nature, for it points to a weakening of the confidence of the oversea investor in South Africa's resources. The chief evidence in support of the contention that capital is leaving the country will be found in our export and import table. It is sufficiently well known that for several years South African exports have exceeded her imports by a considerable margin, and that during the last two years this margin has expanded conspicuously. The excess of exports for the present year, if the proportion established between exports and imports during the first nine months will be maintained during the last quarter of the year, should be about £24,000,000. Some people regard this as cause for gratification, inasmuch as we are paying our way and are increasing our oversea credit balance. A close study of the question does not, however, support such a theory; for all exports, in the case of any country, must be paid for by imports in some shape or form. If there is in the case of South Africa an apparent big deficiency on the import sides, it will be accounted for by certain "invisible" items. The chief "invisible" item, whether regarded as an export or import, is that of securities. Naturally, it is difficult to get complete figures as to the movements of securities, and this is the main reason why an exact balance sheet of a country cannot be drawn out. When a country raises a loan abroad it exports securities; and when interest on the loan or loans raised outside falls due, the same country imports securities in the form of coupons or dividend warrants. Applying this principle to South Africa, we know that capital amounting to something like £6,000,000 has been imported this year, so that presumably securities to that extent have been "invisibly" exported. Assuming the excess of "visible" exports over "visible" imports for the year to be £24,000,000, the excess, after taking into account this "invisible" item, will be £30,000,000. Now the annual interest on South Africa's oversea indebtedness amounts to approximately £20,000,000; so that we have "invisibly" imported securities to this extent, leaving, however, a balance of £10,000,000 in favour of exports still to be accounted for. Discarding, for the purposes of argument, the various minor "invisible" items on both sides of the account, there is reason to believe that a considerable proportion of this £10.000,000 represents exported capital—*i.e.*, securities re-imported invisibly.

TRANSITION STAGE.

In conclusion, Mr. Morgan says that they are not wanting indications that South Africa is now in a stage of transition. At the end of 1910 South Africa's indebtedness to Great Britain in respect of capital was greater than that of Australia, and almost as great as that of Canada. The mines have been responsible for attracting more than a third of this sum; and it looks as though, now that the gold mines cannot give the same return to the investor as formerly, that some of this capital must inevitably be withdrawn. There are those who think that the agricultural and pastoral industries will prove magnets of greater potency in regard to capital than the mining industry has proved in the past. This, however, cannot be in the near future, and in the meantime South Africa has to adjust itself to its changed circumstances. Steps will no doubt be taken to check the re-export of capital, if the surmise concerning such a tendency can beproved to be correct; and no doubt the position will be improved once the country overcomes its present temporary loss of credit. The fact that very few immigrants are coming in has its due influence on the position of capital, for each desirable immigrant brings a sum of money, every pound of which passes, in due course, into fructifying employment. A Rand journal* has suggested that legislation should be passed to compel every Insurance Company doing business in this country to invest in South African securities a sum proportionate to the amount of insurance effected. It is contended that most of the companies have their head offices outside South Africa, and that large sums leave this country every year in the shape of premiums. The same authority adds that if insurance legislation in this country be modelled after that of Canada, companies now carrying on business in South Africa would have to increase their investments in South African securities to the extent of about £6,000.000, which sum would, of course, be a permanent addition to the country's capital. No such charge can, however, be laid at the doors of the banks, for, though the number of competing institutions has declined, a greater volume of business is effected, and a larger percentage of their funds is invested in South Africa than ever. It is significant that, though the total of the banks' capital and reserves declined by £2,000,000 between 1904 and 1912, their advances increased by £5,000,000.

**South African Mining Journal.*

In recent examinations for Government Certificates of Competency, Professor Yates' students have secured 100 per cent. successes.

POSITION AT THE DURBAN ROODEPOORT DEEP.

Progress in the December Quarter Reviewed—Satisfactory Development Disclosures.

At the Durban Roodepoort Deep in the three months ended December 31, the sinking of No. 1 incline and the western sub-incline was continued, but only small footages were accomplished. The development footage showed a decrease of 533 feet for the quarter, owing to the scarcity of natives. but good progress was made with the 12th level main haulage drive from No. 1 shaft. The disclosures on both reefs are again satisfactory, and on South Reef in the 12th level drives east and west good values have been obtained. The acute shortage of native labour still continues, necessitating the extended use of machines in stopes and the mining of a higher proportion of the lower grade Main Reef. Of the tonnage mined in December, 46·4 per cent. was broken by machines, as against 49·3 per cent. for the previous period. The yield was lower by 1s. and the costs by 8d. per ton milled, and the profits, at £9,999, are 1,430 lower. The yield was influenced by the higher percentage of Main Reef mined, and the greater proportion mined by machines. The expenditure on capital account amounted to £1,673, and it is estimated that a further sum of £2,396 will be required in respect of authorised votes. On account of the continued severe shortage of native labour, your directors decided, after very careful consideration of the financial position of the company, that it would be in the best interests of shareholders to pass the dividend per 31st December, 1913. On 8th January a strike occurred amongst the railway servants of the Government of the Union of South Africa; on 13th January a general strike was declared of the members of the Trades Unions affiliated to the Federation of Trades. On 14th, practically all the men except the staff, reduction works employees, pumpmen and engine drivers gave notice. The protection afforded by Government, and the proclamation of martial law, had a most re-assuring effect on the men, and removed the fear of terrorism which was so much in evidence during the troubles of July last. On 15th, 48 underground men returned to work; mining operations since have been resumed gradually. The behaviour of the natives was excellent throughout, and they worked well under the supervision of the staff, with the result that a comparison between the tonnage crushed for the first eighteen days of December and January shows that a decrease of only 324 tons occurred. The property was protected by Government forces; members of the staff and other employees enrolling themselves as special constables.

MINING MEN AND MATTERS.

Mr. G. W. Higgins is understood to be remaining with the London office of Messrs. Farrar Bros.

* * * *

The annual general meeting of the Transvaal Chamber of Mines will be held on Monday, March 23, 1914.

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Mr. Gustav Imroth, of the Johannesburg Consolidated Investment Co., Ltd., left last week-end for a well-deserved six months' holiday in Europe.

* * * *

Mr. T. G. McLelland, having completed his contract with the Frank Smith D.M. Co., Ltd., to superintend the equipment of the mine up to the producing stage, has retired from the active control of affairs. He is succeeded by Mr. Van Essyen.

* * * *

The following is the official list of certificates issued by the Mines Department during the year ended 31st December, 1913:—Mine Managers' Certificates: Metalliferous—First Class (by examination): W. C. Annand, J. N. F. Armstrong, V. H. Barrett, J. H. Beatty, J. G. Bower, H. C. Boydell, H. Bokenham, W. Calder, G. J. v. Clarence, W. H. D. Evans, G. Horne, G. H. Hurtzig, H. E. Inder, A. V. Lange, P. D. Lothrop, P. O. Nel, T. H. Nuttall, R. R. Perkin, H. W. Pridgeon, L. G. Ray, J. Richardson, A. F. Rose, J. C. Roxburgh, B. Schlesinger, A. Smith, M. V. Thomas, R. S. Thompson, M. J. Turner, A. B. Welsh, R. H. Wonnacott. Metlliferous (service): J. Garland, J. M. Jones, H. Lloyd. Coal (by examination): H. Crombie, F. S. Hatton, W. Pattison. Coal (service): A. Barclay, T. Parker. Diamond (service): C. H. Early, T. G. McLelland. Mine Surveyors' Certificates (by examination): R. Bendall, C. J. Briers, B. Broadley, T. Coulter, A. J. T. Crosby, C. N. Davies, D. C. Edington, P. H. Ellis, D. Gilchrist, H. W. Graham, C. Hankey, J. F. G. R. Heywood, W. J. H. Ivey, C. L. Lamb, P. A. Lowe, D. W. McDonald, A. Morrison, R. E. Pickard, K. Richardson, R. Stead, R. S. Tompson, I. Tom, H. W. Unwin. (By service) J. Burrows, W. C. Coe, K. S. Stürup, J. H. Veasey. Mechanical Engineers' Certificates (by examination—with endorsement of "Mining Machinery"): H. Bowman, W. Burns, W. Hitchings, E. J. McWilliams, T. M. Michie, E. Musgrave, P. Osborne, G. H. Silkstone, J. Warrack. (By service—with endorsement of "Mining Machinery"): G. Briscoe, T. P. E. Butt, A. Danks, H. A. Grant, F. W. Higgins, T. Landye, E. Ligertwood, H. L. Marthinusen, J. A. Martyn, T. G. McLelland, S. P. Parkinson, T. W. Wrinch. (By service—with endorsement of "Works"): F. J. Barber, Wm. Cochrane, W. Gossip, J. L. Irvine, W. H. Jones, J. Leys, G. L. McGregor, C. E. Mason, O. A. Pilcher, J. C. Shaw. Electrical Engineers' Certificates (by examination—with endorsement of "Mining Machinery"): J. B. Bullock, G. R. Chaplin, A. E. V. Davies, H. Denehy, A. E. H. Duiham-Peren, A. Ehrenberg, T. Farris, J. M. T. Horne, G. Lavis, A. Marr, E. J. McWilliam, G. E. Mossop, E. H. Owtram, A. E. Scott, J. Wildner, J. S. Wright. (By examination—with endorsement of "Works"): E. H. Owtram, C. O. Petersen, J. Warnack. Service—with endorsement of "Mining Machinery": T. Ligertwood, W. Elsdon Dew. Service—with endorsement of "Works": C. E. Mason, O. A. Pilcher. Mine Overseers' Certificates—Metalliferous—by examination: H. J. Anderson, M. S. E. Archibald, A. E. Baker, T. Barton, H. C. F. Bell, M. Beresford, A. Betts, H. C. Boydell, G. W. Burns, R. C. Clague, F. G. Cooper, P. C. Croft, J. C. Daly, P. v. D. de la Cour, F. H. L. de Marillac, T. F. Duffy, J. Finnie, R. S. George, I. M. Giles, C. Gordon, W. H. B. Gribben, C. J. Grobler, E. W. Hammond, E. W. Hancock, J. Hardy, J. W. Hawkins, G. G. Hewitt, S. B. Jolly, W. J. Jones, G. E. Kemp, J. Kirkpatrick, F. H. E. Leonard, M. J. Lingenfelder, G. Lovat, C. S. McLean, J. G. Milton, J. Olds, T. Olds, W. A. Parr, D. McI. Proctor, W. A. Quince, J. C. Reynolds, A. H. Russel, J. D. F. Schleiss, W. Shambrook, F. G. Stanford, H. F. Still, A. C. G. Taylor, W. W. C. Thomas, C. J. Tutt, J. Twinch, J. H. Veasey, E. T. J. Venables, A. Walters, T. E. Warren, D. Watson, E. H. Wells, R. T. Whitford, W. Wilkinson, R. Williams, W. J. Woolcock, A. O. Wraith, J. Wright, E. J. Yardley. Coal (by examination): R. H. Brown, R. H. Dale, J. R. Donaldson, A. C. Graham, W. Hamilton, E. R. Howell, G. Roberts, J. W. Jones, G. F. Watson. Opencast, Diamonds (by service): C. E. J. Wallace. Coal (by service): J. Chrichton, T. Nicol, H. Walton. Engine Drivers' Certificates—Winding (by examination): G. A. Anderson, G. Anderson, J. Barker, T. H. Brooks, J. Cook, F. Edgely, T. J. Edwards, G. T. Gates, B. Geake, T. C. Harrison, W. D. Hartley, D. Henry, R. Hudson, G. Jordan, G. P. Jorgensen, S. J. Lawrence, W. S. MacKenzie, C. S. Marshall, J. McMaster, R. A. Murton, A. Pournard, W. G. Rowe, E. E. Smith, M. D. Thomas, J. M. Whitfield, P. H. Williams, I. Wilsher. Electric Winding Engine Drivers' Certificates (by examination): G. Gordan, B. O'Leary, W. M. Reynolds, R. H. Taylor. Locomotive (by examination): W. Baker, H. L. Botes, T. Donovan, W. R. Fincham, H. Gilleland, T. W. Graham, T. Hallahan, P. D. Havenga, W. Hodge, C. S. Hovell, F. Labuschagnie, W. Lewis, A. Lovell, W. J. MacLachlan, C. McDonald, J. D. McLean, H. P. Nelson, G. E. Ordemann, F. A. P. Petersen, T. D. Slattery, C. A. Stumke, J. Woods. Electric Locomotive (by examination): R. L. Winslow. Winding Engine Drivers (service): H. Currie, W. Hodge, T. Llewellyn, D. P. Mann, J. Thompson. Locomotive Engine Drivers (service): N. J. Brandon, F. Cowan, T. G. Holland, J. S. Howard. Stationary Engine Drivers' Certificates (by examination): M. I. Brodrick, D. Cameron, J. Dixon, H. England, J. Everinglon, J. W. Glen, W. H. Hartley, R. C. M. Harvie, G. P. Jorgensen, S. Michas, G. Self, E. E. Smith, T. W. Spence, C. H. Watridge. Boiler Attendants' Certificates (by examination): H. S. J. Borgström, G. H. Cox, W. Fawkes, W. A. Ferguson, J. Gilbert, A. G. Hewitt, A. A. le Roux.

Mining Examinations.

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Box 2061.

Rhodesian Section.

LATEST MINING NEWS.

The 1913 Coal Output—Rezende Returns—Lonely Reef Co.'s Report—Eldorado Banket—Rhodesia Copper—The Base Metal Industry—The R.N.L.B.

THE output of coal in Southern Rhodesia during 1913—all of which was produced by the Wankie Colliery Company—was 216,140 tons, of which 162,707 tons were sold for £73,267. This averages out at about 9s. per ton sold, though there is nothing to show if the declared revenue includes sales of coke, large contracts in regard to which are being carried out with the copper mines of the Katanga. The consumption of coal by the mining industry is somewhat limited at present, but there is every reason to hope that means may be found to reduce the cost, thus not only benefiting the mining industry but considerably augmenting the output of the Colliery. A large part of the output is at present being taken by the railway companies. The cost is about 100 per cent. higher at pit's mouth than the cost of coal in the Transvaal, and the railway charges over the long distance which the fuel has to be hauled make it a prohibitive luxury under present-day conditions to the majority of the mines. Incidentally it may be noted that the Colliery paid last year the excellent dividend of 17½ per cent. on its issued capital of £200,000, entailing a distribution of £35,457. In addition it paid to the British South Africa Company (its principal shareholders) a royalty of £4,000 on the coal raised. After its many vicissitudes the company has evidentally attained to the financial position when, if the right policy in regard to prices is pursued, it can be of inestimable use to the premier industry of the country, and at the same time continue to earn for itself the handsome dividends which its enterprise and excellency of product deserve.

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Details of the December working at the Rezende, published by the London office of the company in mail week, contain some interesting cost figures. The total profit was £2,353, a decrease of £210 as compared with November. The output was 2,356 ozs., being smaller by 24 ozs. The Rezende section yielded a profit of £2,347, a reduction of £73 as compared with November.

* * * *

In the matter of the Rhodesia Copper and General Exploration Co., Ltd., a petition has been presented to the High Court of Justice asking for confirmation of the resolution passed to reduce the capital of the company from £562,500 to £352,793.

* * * *

The following is a cable summary of the last quarterly report of the Lonely Reef Company:—Development work, 446 feet; mill ran 70 days, crushed 15,200 tons, yielding 13,569 ozs. Ore reserves, 172,557 tons, average value 17·14 dwts. Incline Shaft: 125 feet below No. 9 level. No. 10 level South drive advanced from 168 feet to 296 feet, average assay value 9 dwts. over 49 inches. No. 10 level North drive advanced from 101 feet to 175 feet; 44 feet of this averaged 2 ozs. 6 dwts. over 28 inches. This drive has gone beyond end ore shoot. 441 feet of reef are exposed in No. 10 level so far, averaging 1 oz. over 48 inches; still driving. No. 9 level, winze No. 4, total depth 125 feet, average assay value from 30 feet to 125 feet, 1 oz. over 31 inches. No. 10 level, No. 1 winze has been sunk to a depth of 38 feet; vein wider than winze throughout; average sample, 1 oz. 6 dwts. over 57 inches. Decrease in ore reserves due to development work chiefly in south end ore shoot, development high grade ore north end having been delayed during the sinking Incline Shaft.

* * * *

The following is the text of a cable despatched from the local to the London office of the Eldorado Banket Gold Mining Co., Ltd., on the 3rd inst.: "Main reef No. 12 level, total distance exposed so far, 20 feet; average assay, 21 dwts. over 91 inches, or 13 dwts. high values reduced; good gold in both faces." The following cable was despatched on the 9th inst.: "Referring to our telegram of 3rd—Main Reef No. 12 level length of shoot so far exposed 55 feet average assay 3 ozs. over 77 inches or 21 dwts. high values reduced both faces show good gold.

* * * *

In our view the time has arrived, now that the British South Africa Company is plainly eager to develop all the possible industries of the country, for some enquiry to be made into the conditions which appear to militate against the active advance of the base metal mining industry, remarks the *Rhodesian Mining Review*. We have shown that a large number of claims are lying dormant for some reason or another, and have said enough to show that no progress is being made at the present time. With the two exceptions of asbestos and the copper to be produced at the Falcon, the base metal and mineral production appears to be a diminishing quantity. When all the manufacturing industries of the world are in a more flourishing state, and continually crying out for increased supplies of raw material, it would seem strange indeed that Rhodesia, through whose length and breadth Nature has scattered unnumbered stores of the essential minerals, should not within a few years be supplying more of the requirements than she is to-day.

* * * *

At the end of last month there was held at Livingstone an informal conference of a large number of those members of the R.N.L. Bureau, who are employed in Northern Rhodesia, for the purpose of meeting Mr. Wolfe Murray, the General Manager, and Mr. Upton, the Secretary. Later there was a general dispersal, Messrs. Wolfe Murray and Upton returning to Bulawayo, Mr. C. C. Bisset departing on leave to England for the first time for over sixteen years, and Messrs. W. J. Slowey and R. A. Osborne for Serenje. Mr. Slowey, it may be mentioned, has been acting as Compound Manager at Livingstone since the transfer of Mr. Potter.

African and European Investment Co.

The following are particulars of the output of the Lonely Mine (Rhodesia) for the month of January, 1914:—Mill ran 26·83 days, crushed 5,970 tons; yield of fine gold, 1,485·88 ozs., value £6,246 4s. 2d.; slimes treated, 5,970 tons; yield of fine gold, 3,009·246 ozs., value £12,650 5s. 7d.; total recovery fine gold, 4,495·126 ozs.; total value, £18,896 9s. 9d.; estimated profit, £10,396.

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QUARTERLY REPORTS.

New Kleinfontein.

The report of the New Kleinfontein for the quarter ended December 31 shows that the working costs were 17s. 0·566d. per ton milled, and that the net working profit was £66,066 13s. 2d. The number of feet driven, risen and sunk (excluding shafts) was 4,062, while ore milled amounted to 148,200 tons. Capital expenditure for the quarter came to £1,793 18s. 8d., made up of £1,472 5s. 5d. for shaft sinking, and £321 13s. 3d. for surface equipment, etc. The payable ore reserves at the end of the quarter were 1,185,437 tons of a value of 7·78 dwts.

New Primrose.

The working costs at the New Primrose were reduced by about sixpence per ton in the quarter ended the 31st of December, as compared with the previous quarter, but as against this the grade was over a shilling per ton lower, so that the gross profit was reduced by £1,937. Very little development work was carried out, but a large percentage of the ore milled was obtained from old workings, and in consequence the reserves were only depleted to the extent of 11,177 tons. Number of feet driven, etc., 691½; ore developed (milling basis), 61,473 tons; ore mined (less waste), 72,650 tons; total yield (exclusive of accumulated slime), 22,751·560 ozs.; yield in fine gold per ton milled, 6·276 dwts.; working profit, £49,563 13s.; gross profit, £52,298 18s. 10d.

New Rietfontein.

The results for the quarter ended the 31st of December at the New Rietfontein have been disappointing. It was hoped that an improvement in the grade would be forthcoming, but unfortunately this anticipation was not realised. The flooding of a portion of the mine as a result of the heavy rainstorm on the 13th of November also had an adverse effect on the returns. Number of feet driven, etc., 1,740; ore developed (milling basis), 40,410 tons; ore mined (less waste), 44,790 tons; total yield, 10,324·129 ozs.; yield of fine gold per ton milled, 4·640 dwts.; working loss, £1,075.

New Unified.

The gross profit at the New Unified for the quarter ended the 31st of December was higher than that for the previous quarter by £1,538. There was an increase in the tonnage milled of 1,925 tons, and working costs were reduced by about 11d. per ton. Development operations were concentrated on the south reef, and the average value of the ore exposed was of a satisfactory nature. Number of feet driven, etc., 971; ore developed (milling basis), 27,764 tons; ore mined (less waste), 38,095 tons; total yield (exclusive of accumulated slime), 10,876,578 ozs.; yield in fine gold per ton milled, 5.718 dwts.; working profit, £14,806 7s. 11d.; gross profit, £15,535 0s. 1d.

New Heriot.

In their report for the quarter ended December 31 the directors of the New Heriot refer to the rainstorm of November 13, which seriously flooded the mine and involved the company in heavy expenditure in installing additional pumping plant, the dewatering and clearing of the mine and the carrying out of necessary repairs. The directors promise to give full details in the annual report. Full operations had only been resumed at the mine when the strike occurred; but the mill was kept running on a reduced scale till January 20, when the whole of the seventy stamps were again in operation. It is now expected that the normal conditions will be maintained. During the quarter 270 feet of development work was done. The profit was £5,469 12s. 5d.

Witwatersrand Deep.

There was an increase of 10,840 tons in the quantity of ore milled at the Witwatersrand during the quarter ended 31st December, as compared with the previous quarter. The grade was 5d. per ton higher, and there was a slight reduction in working costs. As a result the gross profit showed an increase of £9,432. The milling costs show an increase of about 6d. per ton. This is accounted for by the fact that the new tube mill plant was brought into operation in October. The plant is now running most satisfactorily, and the average value of the residues has been reduced to .262 dwt. Owing to the continued scarcity of native labour, operations have not yet been resumed at the vertical shaft, and consequently no development was done in the southern section of the mine. Number of feet driven, 936; ore developed (milling basis), 47,262 tons; ore mined (less waste), 115,910 tons; total yield, 34,356.717 ozs.; yield in fine gold per ton milled, 5,937 dwts.; working profit, £62,942 8s. 6d.; total gross profit, £69,740 8s. 5d.; capital expenditure, £16,343 17s. 4d.

Consolidated Langlaagte.

The report of the directors of the Consolidated Langlaagte for the quarter ended December 31st is as follows:—Number of feet driven, sunk and risen, exclusive of stopes, 2,776 feet; ore developed (milling basis), 130,323 tons; ore mined, 132,696 tons; less waste sorted out (6.64 per cent.), 8,806 tons—123,890 tons (per cent.), 19,183 tons—45,057 tons. Tons crushed, 123,890; duty per stamp per day, 21.65 tons; total yield (exclusive of accumulated slime), 40,409,297 ozs.; yield in fine gold per ton milled, 6.523 dwts. Accumulated slime treatment: Tons treated, 6,711; yield in fine gold, 511,511 ozs.; yield per ton treated, fine gold, 1,524 dwts. Working revenue, £171,647 (27.710s. per ton); working cost, £107,959 (17.429s. per ton); working profit, £63,688 (10.281s. per ton); gross profit (including sundry revenue), £66,895; net profit, £57,603. The operations at this mine have been handicapped by the scarcity of native labour. As a result the tonnage crushed was less than that for the previous quarter by 5,560 tons, and the development footage accomplished was reduced by about 1,000 feet. Fortunately the grade of the ore sent to the mill showed an improvement of 1s. 3d. per ton, and there was an increase of £2,000 in the revenue from accumulated slime. Consequently the total gross profit was higher than that for the preceding three months by £6,677. The east incline shaft was sunk 186 feet to a total depth of 2,965 feet; no sinking was done at the west incline shaft. Development results were quite satisfactory both as regards the south reef and the main reef leader.

Aurora West.

The revenue of Aurora West for quarter ended 31st December was £56,691 10s. 8d., or £1 6s. 5.33d. per ton from 42,877 tons milled; cost £41,903 15s. 8d., or 19s. 6.55d. per ton; profit, £14,787 15s., or 6s. 10.78d. per ton; total yield, 13,360 ozs.; capital expenditure, £1,378 6s. 5d.; number of feet driven, sunk, and risen, 2,108 feet; footage sampled on reef, 1,445 feet; average stoping width, 44.06 in.; average assay value over stoping width, payable (855 feet sampled) 10.49 dwts.; low grade (590 feet sampled) 2.09 dwts. The working profit shows a decrease of £743 17s. 5d., as compared with the previous quarter. The average development values represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserve.

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Engineering Notes and News.

CENTRALIZED WORKING AT THE CROWN MINES.

Mr. Warriner's Reply to His Critics—Future of Working Costs—Further Economies Foreshadowed.

At the monthly meeting of the S.A. Institute of Engineers last Saturday night Mr. Warriner replied to the discussion on his now historic paper on "Centralization at the Crown Mines." Referring to the criticism of Mr. Woodburne and Mr. Laschinger on the system of chutes installed to permit of concentration of ore to the thirteenth level, Mr. Warriner pointed out that Mr. Laschinger referred to the scheme as being one to utilise ore passes to take the place of incline shafts, but it seemed to Mr. Warriner that Mr. Laschinger had missed almost the entire purpose of the lay-out on the Crown Mines. The objects sought in developing the lower workings on this system, Mr. Warriner went on to say, were, firstly, the accumulation of a very large reserve of ore as a matter of policy towards the future. This large reserve was to serve the purpose of providing a sufficient number of faces to supply the mills on single shift and to economise in the amount of actual development footage requisite by opening up in large blocks and equipping each block with a system of ore passes, that was, to effect a saving in the cost of the development required to maintain the ore reserve position.

Efficiency and Economy.

Secondly, Mr. Warriner went on, it was anticipated that a material saving in labour and cost would be effected in shovelling in stopes. Thirdly, the hand tramming distances would be greatly reduced, the ore being concentrated to the thirteenth level at each line of chutes and handled thence to the shaft by mechanical traction, thus again, it was hoped, increasing the efficiency of the labour force and reducing the cost. Fourthly, at the main haulage levels—the 13th, 16th and 19th—were anything from 1,200 to 1,300 feet apart on the pitch, and as the intermediate levels were only equipped with small ore boxes, it was only necessary to put in three permanent ore boxes at the 13th, 16th and 19th levels to handle the entire tonnage north of the dyke. This had also effected considerable economy in shaft and station equipment and in hoisting, in that the hoisting of ore was concentrated on a few levels.

Practical Illustration.

Illustrating by actual results what had been accomplished in these directions, Mr. Warriner analysed the cost of the installation. He was unable to separate the cost of the 13th level drive and the cost of the crosscuts and ore chutes from the total; but the following table gave the total amount spent from 1st July, 1909, the date of the amalgamation, to the 31st December, 1913:—

	Total Cost.			Per Ton Milled if all had been charged to Costs.	
				s.	d
July to Dec., 1909	£44,295	14	4	1	2·3
Year 1910	160,901	19	1	2	1·5
Year 1911	244,873	9	10	3	0·3
Year 1912	182,808	1	11	1	10·8
Year 1913	101,436	1	4	0	11·0
Totals	£734,315	6	6	1	10·0

From the table Mr. Warriner was able to show that had the total cost of development over this period been charged to working account, it would have amounted to only 1s. 10d. per ton milled.

Great Increase in Ore Reserves.

The ore reserves at December, 1909, amounted to 3,916,593 tons, and at December, 1913, to 11,286,241 tons —an increase of 7,369,648 tons during the four years. During those years 6,465,949 tons were mined from ore reserves, equivalent to 46·7 per cent. of the total ore developed during the above-mentioned period. That was, had they by the system of development installed, only aimed at maintaining the ore reserves, it would only have been necessary to spend 46·7 per cent. of the amount which was expended on development, and the cost of development on that assumption would have amounted to only 10·6d. per ton milled. The average mine on the Rand was charging out anything from 2s. 6d. to 3s. 6d. per ton milled for development redemption—that was, for developing only sufficient ore to replace the ore mined. Accordingly, if the actual charge of the Crown Mines to accomplish the same thing during the last four years had only been 10·6d., it was conservative to assume that by this system of development the Crown Mines had saved at least one shilling per ton milled.

Virtue in Comparison.

Had the Crown Mines gained anything in efficiency in shovelling and tramming by the installation of the system? In reply to this Mr. Warriner pointed out that the best portion of the mine in which to study the question was the No. 3 shaft section, where two of the principal lines of chutes were in operation. All the ore in the section was not ore that was handled by this system; about 30 per cent. of it probably came from stopes that were worked on the old system. Yet a study of figures of efficiency previous to the installation of the system and a comparison of them with present figures was instructive. In December, 1911, the tons handled per unskilled shift in the section were 2·03,

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while in December, 1913, 2·91 tons were handled per shift, showing an increase in efficiency of approximately 50 per cent. December, 1911, was an average month at that time. The cost per ton handled then was 2s. 5·6d.; the cost in December, 1913, was 2s. 1·4d., showing a saving of 4·2d. At present the cost of laying the tracks east and west from the various box-holes and blasting of the footwall, etc., was debited to shovelling and tramming in order to obtain a fair comparative figure. Mr. Warriner anticipated that as a greater percentage of the ore mined came from the section where this system was installed a further benefit would accrue.

Conclusive Proof.

Then Mr. Warriner dealt with the labour aspect of the installation. The coloured labour force at the property in October, 1913, when it was at nearly low-water mark—employed on productive work was 9,992 boys. In order to find a month when they were as short of labour as at that time they were obliged to refer back to January, 1910, when the total force employed on productive work amounted to 10,042, or fifty boys more than in October, 1913. The fathoms broken and tonnage mined during these months showed the following:—

Fathoms Broken.	January, 1910.	October, 1913.
Hand	1,394·5	1,514·4
Machines	5,296·2	9,118·4
Total	6,690·7	10,632·8
Tons mined	131,642	194,129
Tons milled	127,900	175,000

Therefore, it would be seen that in October, 1913, 62,000 tons more were mined with approximately the same labour force. That was a sufficient tonnage to represent the monthly output of a very large mine, such, for instance, as the City Deep, the Nourse Mines or the Geldenhuis Deep. Mr. Warriner contended that the increase was undoubtedly mostly due to the advantage obtained from carrying into effect the centralization programme, and by working the entire property as one mine by the methods to which he had referred.

Costs Coming Down.

On the matter of working costs Mr. Warriner made an important reference in bringing the figures of costs shown in his original paper up to date. He had shown the total working costs per ton in January, 1913, when 190,000 tons were milled, as 16s. 11·6d., and he had stated that future operations would show still further economy, it being then too early to study the effects on costs. In January, 1914, costs per ton milled had fallen a further 1s. 6d. to 15s. 5d. per ton milled though only 168,000 tons were milled in the latter month owing to the present acute shortage of native labour. Should the labour position improve sufficiently to permit the Crown Mines to mill their maximum tonnage the hope for a still further reduction in the cost of production per ton might be realised. Dealing with the suggestion of Mr. Woodburne that in equipping a new property additional efficiency could be obtained in the lay-out by sinking two shafts close together instead of at a distance of a thousand yards or so, Mr. Warriner said that from a ventilation and mining point of view, he could not possibly see what advantage would be gained by sinking two shafts close together as compared with sinking one large vertical shaft, except that it meant providing duplicate equipment in case of breakdown. As breakdowns were of very rare occurrence in vertical shafts, it appeared to him that it would be unnecessary duplication.

Rotary Converters for Municipal Work.

In reporting on tenders for rotary converters, the General Manager, Tramway and Lighting Department, Johannesburg Municipality, writes, *inter alia*:—"The lowest tender for rotary converters is that of the British General Electric Co. I do not wish to say that this firm cannot make rotary converters as well as any other firm, but their experience in the manufacture of rotary converters is exceedingly limited when compared with the next lowest tenderer, and, without deprecating in any way whatever the goods supplied by this firm, I feel that the Council would be running a risk by installing plant 7,000 miles away from the seat of manufacture unless such manufacturers had an established reputation as specialists in rotary converter manufacture. For the information of the Committee, lists are laid on the table showing the number of rotary converters built by the British General Electric Co., and also by the next lowest tenderer, the British Westinghouse Co. I have been in telegraphic communication with the engineers of some of the Corporations referred to by the British General Electric Co., and, as a result, find that a large proportion of the machines referred to have either only just been delivered or have only been in operation a short time. On the other hand, it will be noted that the British Westinghouse Co. have turned out several hundred rotary converters—in fact, this firm are recognised pioneers and specialists in the manufacture of this type of converting plant. I regret that I am therefore unable to recommend the lowest tender. The next lowest tender is that of the British Westinghouse Company. There is only a difference of £469 in £8,242. As before stated, the British Westinghouse Co. are recognised pioneers and specialists in the manufacture of rotary converters, and admittedly have greater experience than any other firm in Great Britain. From the long list of machines which they have made, and which are running satisfactorily, I have every confidence in their manufacture. To satisfy myself on this point, I recently paid a visit to the Durban Municipal Power Plant, and inspected the running of a rotary converter of the same size and under the same conditions as the plant now being tendered for will run. I satisfied myself, after close personal inspection of the machine under actual working conditions at Durban, that the plant now tendered for by the British Westinghouse Co. would be satisfactory. Taking everything into consideration, I have no hesitation in recommending the tender of the British Westinghouse Co., feeling sure that the Council will be installing plant with a reasonable capital expenditure, high efficiency, and a maximum of reliability." The tender of the British Westinghouse Co. for six 500 kw. rotary converters complete with switchgear for a total sum of £8,242 was therefore recommended for acceptance.

A labour bureau in connection with the East Rand Proprietary Mines, Ltd., has been established at the head office of the mine, under Mr. C. B. Surmon, of the Driefontein section. All applications must be made to him for employment, both surface and underground. In future no engagements will be made except through this department.

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Finance, Commerce, and Industries.

Mine Prop Trade.

There are still large demands for mine props and considerable difficulty has been experienced by mine managers and others in obtaining supplies (says the annual report of the Chief Conservator of Forests). Prices have advanced somewhat, but, on the other hand, a reduction in railway rates for this class of material has enabled the mines to go further afield, and it is now no uncommon sight to see pit props despatched all the way from stations in the vicinity of Capetown to the Rand. Some of the Government plantations will be in a position to supply pit props from necessary thinnings in the course of the next year or two. Kluitjes Kraal continues, as it has done for the last fifteen years or more, to supply the major portion of the pit props used at the Kimberley Diamond Mines. These latter mines are very particular in their choice of a pit prop, and, in consequence, pay an average price of over 1s. per cubic foot for the material taken.

* * * *

Union Rubber Production.

The following return shows the quantity and value of crude rubber, latex and coagulated sap exported from the Union of South Africa during the years 1910, 1911 and 1912:—1910: 3,529 lbs., value £651. 1911: 26,439 lbs., value £1,461. 1912: 139,119 lbs., value £3,998. The Port Elizabeth exports were most probably obtained from different varieties of Euphorbia growing in the Port Elizabeth *hinterland* and in respect to which the rubber content is very low. The Durban exports, it is assumed from the operations now being conducted in Natal, are mainly derived from the *Euphorbia tirucalli* and the *Landolphia kirkii* rubber vine. The Port Nolloth exports would be entirely from the dwarf Euphorbia common to Namaqualand and adjacent divisions and locally known as Melk Bosch. At Mgxwala Hill, near the Umkuzi River, Northern Zululand, Ceara Rubber (*Manihot glaziovii*) is reported to be thriving, and the manager states that 50 acres have been successfully established. Trees planted in October, 1911, and afterwards cut back to within six inches of the ground, are now 12 to 16 feet high. A sample of apparently good Ceara rubber from this centre has been submitted. The Mgxwala Hill Estate is leased to the Amatongaland Rubber Corporation by the Government. Landolphia rubber vines (*Landolphia kirkii*) in Zululand, cut at about two feet from the ground, are reported to have coppiced vigorously, and in two years have made length growth of about 13 feet. The shoots are numerous, of the thickness of a lead pencil, and it seems probable that to obtain an increase of diameter some system of thinning should be practised. The rubber content of the re-growth has not been tested.

* * * *

The Union's Coal Trade.

The coal raised and sold by the various collieries of the Union of South Africa during December amounted to 757,396 tons and had a value of £190,194, as compared with 685,734 tons of a value of £171,317 in November. For a summer month the December output was practically a record. It is easily understood that during the winter months there is a tendency to produce and consume more coal than during the summer, and it is noticeable that in July last the output of the coal fields of the Union reached high water mark at 775,770 tons, the value at pit's mouth being £197,078. As to the Transvaal, the output for December at 468,931 tons represents a record, although the value at £102,576 is very slightly below the price realised for the August output—£102,749. Whilst the Transvaal's output constituted a record, the amount raised by the Natal collieries—231,410 tons—although substantially greater than the November production, was still considerably below the more normal average outputs of the middle months of the year, and this is in large degree attributable to the strike amongst the coal miners on the coal fields of the northern part of the Province. The Orange Free State's output was 52,232 tons, which sold for £14,827, or an equivalent of 5s. 8·13d. per ton at pit's mouth, as compared with 4s. 4·5d. per ton for the Transvaal, 5s. 11·84d. for Natal and 11s. 1·56d. for the Cape. The Transvaal, it will be seen, was far and away the largest contributor to the Union's coal trade, and the larger production of this Province during recent months is no doubt in no small measure due to the growth of the export trade. An examination of statistics relative to the coal trade of the Transvaal during recent years shows that the proportion of coal raised by the Middelburg-Witbank Collieries has increased enormously. Out of a total of 468,931 tons sold in the Transvaal during December the Middelburg area produced no less than 365,713 tons as compared with 38,108 tons for the Springs-Brakpan area and 65,110 tons for "other areas."

* * * *

Workers versus Agitators.

Among the most interesting and instructive comments on the recent New Zealand strike is a manifesto by the United Labour Party. After reviewing the various stages of the dispute, the manifesto concludes: "A general survey of the situation must convince the public and all true Unionists that the United Federation of Labour's revolutionary policy is one of disruption in the Labour movement, and of deliberate anarchy, as affecting public interests. Through the Federation's advocates on the Waterside Workers' Union, they broke their own union rules, tore up their constitution, disregarded the agreement they had made, and plunged themselves, their fellow-workers, and the whole country into serious trouble. The existence of this propaganda of irresponsible revolutionary action has destroyed many workers' unions which it took years of hard toil to create. The remedy lies in the hands of the workers, and each individual must take an active and intelligent interest in the affairs of his union. If sound trades unionism is to live, it can only be by straight refutation of the doctrines and methods of insane revolutionism. The workers must return to the constructive line of action which enabled the Trades Councils in past years to secure most of the labour legislation we possess. Our unions must federate together in one, not to violate or oppose the law of our country, but to uphold the law and make it better for our people as a whole."

The next monthly meeting of the members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday, 23rd February, 1914, at 8.15 p.m. The minutes of the ordinary monthly meeting held on the 17th November, 1913, will be read. The following papers will be open for discussion:—"The Geology of Katanga and Northern Rhodesia—an Outline of the Geology of South Central Africa," by F. E. Studt, A.R.C.S. "The Cassiterite Lodes of Leeuwpoort (938); the Paragenesis of the Lode-forming Minerals," by David P. MacDonald, M.A., B.Sc. "Notes on the Tin Deposits of Embabane and Forbes Reef in Swaziland," by A. L. Hall, B.A. "The Terraces of Eerste River at Stellenbosch," by S. J. Shand, D.Sc., Ph.D. "Notes on a Form of Black Diamond from the Premier Mine," by David P. MacDonald, M.A., B.Sc. The following papers will be read:—"Notes on some Prehistoric Stone Implements found in Katanga," by F. E. Studt, A.R.C.S. "The Granite Dykes of the 3,520 ft. Level, Kimberley Mine," by E. H. L. Schwarz, A.R.C.S.

LOUIS BENZIAN,
HAMBURG,
Buyer of Blue and White Asbestos.
OFFERS INVITED.

New Companies.

The following companies have been registered during the month of January:—

United Film Supply Company, Ltd., 12 Loewenstein Buildings, Market Square, Johannesburg; capital £1,000.
The Market Square Pharmacy, Ltd., No. 74 Market Street, Johannesburg; capital £1,000.
Alma, Ltd., Erf No. 49, Kruger Street, Piet Retief; capital £2,750.
The Germiston General Agency Company, Ltd., No. 216 Meyer Street, Georgetown, Germiston; capital £1,000.
Little Giant Motor Wagon Agency, Ltd., No. 144 Stock Exchange, Johannesburg; capital £500.
Hoehler Motor Wagon Agency, Ltd., No. 144 Stock Exchange, Johannesburg; capital £100.
Macklin, Ltd., No. 24 Simmonds Street, Johannesburg; capital £1,000.
The Builders' Supply, Ltd., Bank of Africa Chambers, Church Square, Pretoria; capital £1,000.

Foreign Companies Registered.

The Hex Consolidated, Ltd., care of Horace Tremlett, Sabie, Transvaal; capital £50,000.

Additions and Alterations.

Associated Mines of Rhodesia, Ltd.

Prospectuses.

The Premier Mine Dairy Farmers' Association, Premier Mine.
Brakpan Real Estate Syndicate, Ltd., Brakpan.

Increases of Capital.

The New Rand, Ltd., Johannesburg; increased from £160,751 to £170,751.

Voluntary Liquidations.

The following companies have been placed in voluntary liquidation:

D.D. Syndicate, Ltd., Pretoria.
Union Investment Company, Ltd., Johannesburg.
Arthur Barnett & Company, Ltd., Johannesburg.
Hardie & Cotton, Ltd., Johannesburg.
Universal Film Supply Company, Ltd., Johannesburg.
United Buffelsdoorn Mines, Ltd., Johannesburg
Central Buffelsdoorn Gold Mines, Ltd., Johannesburg.

State Aid to Mining.

The Union Estimates for 1914-15 contain the following figures, showing the direct assistance to mining:—

	1914-15.	1913-14.
Assistance for District Mining Development—		
Construction and repair of drifts and roads	£15,000	£15,000
General assistance—Advances, purchase and hire of plant, etc.	5,000	5,000
Sanitary services at diamond diggings, Bloemhof district	1,200	1,200
Total	£21,200	£21,200
Filling in and fencing of abandoned shafts	500	500
Trading Stand Licences	1,100	1,100
Miners' Phthisis Prevention Committee	1,000	500
Miners' Phthisis Board—		
Fees of members	720	720
Salaries of staff	3,306	2,725
Fees of Medical Advisers	6,000	5,000
Fees of Actuary	400	400
Transport and travelling	150	150
Incidental expenses, books, etc.	250	250
Total	£10,826	£9,245

Presiding at the annual meeting of the South African Gold Trust, Ltd., in London this week, Lord Harris said it was very difficult to say what effect the recent disturbances in South Africa would have upon the labour supply and low-grade mines. He trusted that the Union Government would see that it was in the interests of the country to encourage labour to come forward. He hoped the disturbances had cleared the air, and that the drastic measures adopted, whether they agreed with them or not, would at least go some way to convince men of the legitimacy of the Government's view. Latest advices showed that the disturbances had not had the effect of terrorising the natives, who were coming forward in better numbers.

Mining Dividends Payable.

The following table shows the recent South African mining dividends declared or recommended and dates payable where announced: Mining shares, according to the Stock Exchange rule, are marked "ex div." on the Settlement Day immediately following the date of payment of the dividend and are then taken out of the list

Kaffir dividends are usually paid in Europe about six weeks or more after the declaration in South Africa.

Shares are of the denomination of £1 unless otherwise stated.

Announced.	Company.	Dividend.	Payable.
Dec. 12	Bantjes Consolidated	0 6	Feb. 4
Dec. 3	Blaauwbosch Diamonds	4 0	Feb.
Dec. 19	Brakpan	2 6‡	Feb.
Dec. 18	Breyten Collieries	2 0	Jan. 29
Dec. 23	Cassel Coal	1 0	—
Dec. 12	City Deep	1 6‡	Feb. 4
Dec. 12	City and Suburban (£4 shares)	6 0	Jan. 26
Dec. 15	Consolidated Langlaagte	2 0	Feb. 12
Dec. 11	Consolidated Main Reef	1 0	—
Dec. 13	Crown Mines (10s. shares)	5 6‡	Feb. 4
Dec. 17	East Rand Proprietary	2 6‡	Feb. 5
Jan. 22	Gaika	1 0‡	Feb. 12
Dec. 12	Geldenhuis Deep	1 6‡	Feb. 4
Dec. 15	Ginsberg	3 6	Feb. 12
Dec. 15	Glencairn	1 0	—
Dec. 19	Glencoe (Natal) Collieries	0 6	—
Jan. 5	Globe and Phoenix (5s. shares)	1 0‡	Feb. 12
Dec. 18	Knights Deep	1 0	Feb. 12
Dec. 15	Knights (Witwatersrand)	5 0	Feb. 12
Dec. 24	Koffyfontein Estates	3 0‡	End Feb
Dec. 24	Langlaagte Estates	0 6	
Jan. 15	Lonely Reef	2 0*	Feb. 25
Dec. 15	May Consilidated	1 0	Feb.
Dec. 13	Meyer and Charlton	8 0	Feb. 10
Dec. 12	Modderfontein B	5 0‡	Feb. 4
Dec. 16	Natal Navigation Collieries	0 9	Feb. 6
Dec. 19	New Era (5s. shares)	0 6	—
Dec. 18	New Kleinfontein	1 6‡	Feb. 10
Dec. 12	New Modderfontein (£4 shares)	12 0‡	Feb. 4
Dec. 15	New Primrose	6 0	Feb. 12
Dec. 15	New Rietfontein	0 6	Feb. 12
Dec. 15	New Unified	2 0	Feb. 12
Dec. 13	New Vaal River Diamonds	2 0	Feb.
Dec. 18	Nigel	2 0	End Jan.
Dec. 12	Nourse Mines	2 0‡	Feb. 4
Dec. 22	Premier Diamonds Def. (2s. 6d.)	8 9*	Feb. 10
Dec. 24	Randfontein Central	0 6	—
Dec. 24	Randfontein Estates	0 6	—
Dec. 12	Rand Mines (5s. shares)	5 6‡	Feb. 11
Dec. 13	Robinson (£5 shares)	7 0‡	Feb. 4
Dec. 18	Robinson Deep	2 6	Jan. 29
Dec. 17	Rooiberg Minerals Development	2 0‡	Feb. 3
Dec. 12	Rose Deep	3 6‡	Feb. 4
Dec. 18	Simmer and Jack	1 3	Feb. 12
Dec. 18	Sub-Nigel	0 6	Feb. 12
Dec. 19	Transvaal Coal Trust	1 6‡	Feb.
Dec. 15	Van Ryn Deep	1 6	Feb. 12
Dec. 12	Village Deep	1 0†	Feb. 4
Dec. 10	Village Main Reef	7 0*	Jan. 31
Dec. 11	Witwatersrand Deep	4 0	—
Dec. 30	Witwatersrand Township	1 0	—
Dec. 22	Worcester Exploration	1 6‡	March 5

* Free of income-tax. ‡ Less income-tax.

Tenders Accepted.

The summary of the recommendations by the Municipal Council for Town Hall furnishings is:—Schedule "A" (General Furniture): Messrs. Waring & Gillow, £20,079 16s. 3d. Schedule "B" (Steel Shelving and Furniture to Strong Room): Messrs. Chubb & Maxwell, £4,876 19s.; Messrs. The Remington Agency for Art Metal Co., £709. Schedule "C" (Blinds, Lino., Carpets, Curtains, Coir Mats, Sundries and Contingencies): Messrs. W. Hosken & Co., £1,444 10s. 9d.; Messrs. Waring & Gillow, £2,642 5s. 8d. Schedule "D" (Council Chamber): Messrs. H. H. Martyn & Co., £2,445. Schedule "E" (Town Hall Chairs, etc.): Messrs. Wilks, James & Co., £2,560; Messrs. Stuttaford & Co., £178. Schedule "F" (Reception Rooms): Messrs. Waring & Gillow, £3,099 3s. 3d. Total, £38,034 14s. 11d.

Printing, Bookbinding, Account Books, Tracing Cloth, Tracing Paper Drawing Paper, Ferro Prussiate, Ferro Gallic, Indian Inks, Rubber Stamps, Stationery of all descriptions, Draughtsman's and Surveyor's Requisites.

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TELEPHONE 2065.

THE WEEK IN THE SHAREMARKET.

Easier with Little Doing—Fluctuating in London—Better Tin and Diamond Outlook.

THE buying from Paris has slackened, and an easier tendency pervades the market. The set back, if it can be so described, is likely, however, to be but temporary and the forward movement of the market can hardly now be stayed. It will, of course, take some months for the results of recent improvements on the mines to make themselves felt; and by that time we can safely expect a gradual amelioration in the market. Diamonds are firmer on more favourable news from London, and tins are likewise a little better on the recent advance in the price of the metal.

* * * *

	Fri., 13th.	Sat., 14th.	Mon., 16th	Tues., 17th.	Wed., 18th.	Thurs., 19th.
Adair-Ushers	0 3*	0 3*	0 9†	0 9†	0 3*	0 3*
African-Europeans	—	—	—		8 6*	—
African Farms	15 4*	15 3	15 3*	15 3*	15 3*	15 0
Apex Mines	19 0*	19 3*	—	18 6*	18 9*	18 0*
Aurora Wests	—	—	—		—	9 6*
Bantjes Consolidated	15 6*	16 0†	15 0*	15 0*	15 6*	16 0†
Benoni Consolidated	2 0	1 10*	1 10*	—	1 10*	1 9*
Brakpan Mines	54 6*	—	—	—	—	
Breyten Collieries	—	—	—	29 0*	29 0*	29 0*
British South Africa	—		—	21 6†	—	
Bushveld Tins	0 8*	0 8*		—	0 7	0 6
Cassel Coals	14 0*	14 0*	—	—	13 6*	13 6*
City and Suburbans	43 0*	43 3*	43 6*	43 6*	43 6*	43 0*
City Deeps	61 0*	63 0	63 0*	61 0*	61 3*	60 6*
Cloverfield Mines	5 7	5 6*	5 6*	5 4*	5 3*	5 1
Clydesdale Collieries	9 0*	9 0*	9 0*	—	—	9 0*
Cons. Investments	21 0*	21 0*	21 0*	22 0†	—	—
Cons. Langlaagtes	30 6*	30 6*	30 6*	30 0*	30 6	—
Cons. Main Reefs	17 9*	18 0	18 6	18 0	18 0*	18 0
Cons. Mines Selection	11 0†	—		—	12 0†	11 0†
Coronation Collieries	19 0*	19 6*	19 6*	20 0*	21 6	20 6*
Coronation Freeholds	0 6†	0 4*	0 5*	0 5*	0 5*	0 5*
Coronation Syndicates	—	4 0*	4 0*	4 0*	—	—
Crown Diamonds	8 9*	8 9	8 9	8 9*	8 9*	9 0
Doornhoek Tins	3 0†	—	—	—	2 6	—
Durban Rood. Deeps	—	19 0*	—	—	—	—
East Rand Centrals	2 3*	2 6	2 3*	2 9	2 9*	2 9
East Rand Coals	1 8*	1 8*	1 8*	1 8*	1 8*	1 8*
East Rand Deeps	1 9*	1 9*	1 10*	—	1 7*	1 9*
East Rand Props.	40 0*	40 0*	41 0†	—	39 0*	39 6*
East Rand Debentures	—	£85*	—	£87½†	—	—
Eastern Gold Mines	1 5*	1 3*	1 4*	1 4*	1 5	1 4*
Ferreira Deeps	—	—	—	—	45 0*	—
Frank Smith Diamonds	6 2	6 1*	6 0*	6 0*	5 9	5 6
French Rands	—	—	—	1 6*	—	—
Geduld Props.	26 6	26 3*	26 0*	26 0	25 6*	24 9*
Geldenhuis Deeps	—	—	23 0*			—
Glencoe (Natal) Collieries	—	—	6 3*	—	7 0†	—
Government Areas	20 9*	21 0*	21 0	21 0	21 0	20 6
Jhb. Board of Executors	—	—	25 0†	25 0†		26 3†
Johannesburg Estate	3 0*	3 0*	3 0*	3 0*	—	—
Jumpers	—	—	—	—		3 0*
Jupiters	5 9†	5 3*	5 9†	5 3	5 3*	—
Kaalfontein Diamonds	0 4*	0 6†	0 4*	0 6†	0 6†	0 6†
Kleinfontein Estate	—	—	25 0†	—	—	25 0†
Klerksdorp Props.	2 4	2 4*	—	—	2 3*	2 3*
Knight Centrals	9 3	9 1*	9 9	9 9	11 6	10 9
Knights Deeps	—	31 6*	—	—	—	30 0*
Lace Props.	3 9	3 7*	3 7*	3 6*	3 6*	3 6*
Langlaagte Estates	—	—	—	—	16 0*	16 0*
Luipaardsvlei Estates	—	—	—	9 6*	—	9 6*
Lydenburg Farms	3 0*	—	—	2 9*	—	—
Main Reef Wests	9 6*	9 9*	9 9*	9 6*	9 7*	9 0*
Main Reef West Debs.	£69*	—	—	—	—	
Middlevlei Estates	1 1*	1 1*	1 0*	1 0*	1 1*	1 0*
Modderfontein B.	82 6*	83 3*	82 6*	84 0†	82 0*	
Modderfontein Deeps	44 6	45 9	46 6*	46 9	47 3	46 [illegible]
Natal Navigation Colls.	15 0*	—	15 0*	15 0*	16 0*	—
New Boksburgs	—	—	1 0*	—	1 0*	
New Eland Diamonds	—	—	—	27 0*	27 0*	27 0*
New Era Consolidated	—	6 9*	6 6*	—	6 6*	6 9*
New Geduld Deeps	2 1	2 0*	2 0*	2 1*	2 1*	2 0*
New Kleinfonteins	25 0	24 6*	25 0	24 6	24 6	24 0*
New Modderfonteins	242 6*	242 6*	245 0*	—	—	—
New Rietfonteins	2 9*	—	2 6*	—	—	—
New Unifieds	15 0*	—	—	—	—	
Orange Diamonds	1 6*	1 6*	1 6*	1 8*	1 6*	1 6*
Piggs Peak	10 0*	10 0	10 0*	10 0*	10 0*	10 0
Premier Preferreds	172 6*	175 0*	175 0*	175 0*	175 0*	177 6*
Pretoria Cements	46 0*	46 3*	—	46 6*	46 6*	46 0
Princess Estate	6 6†	—	—	—	—	
Rand Collieries	2 0*	—	1 6*	3 9†	1 0*	—
Rand Klips	2 5	2 5*	2 7*	2 [illegible]	2 7*	2 7*
Rand Nucleus	1 10*	1 10*	1 11	1 11	1 11*	1 9*
Randfontein Deeps	4 3*	4 2	4 [illegible]		4 0*	4 [illegible]
Randfontein Estates	23 6	23 [illegible]	23 [illegible]	24 0*	24 3*	23 [illegible]
Roberts Victors			23 6*		28 6*	—
Robinson Deeps	[illegible]	[illegible]	[illegible]	[illegible]	30 0*	31 0*
Rooiberg Minerals	27 3*	27 0	27 9*	27 [illegible]	27 0*	27 0
[illegible]		3 [illegible]			3 [illegible]	3 0*
Shebas	5 3*	5 3*	5 [illegible]	5 [illegible]	5 3*	5 [illegible]
Simmer Deeps	2 6†		1 [illegible]	2 6†		2 [illegible]
S.A. Breweries	41 0†		41 [illegible]	41 [illegible]	41 0†	—
S.A. Diamonds		3[illegible]	3[illegible]		3[illegible]	3[illegible] 0*
S.A. Lands	3 3*	3 3*	3 3*	3 [illegible]	3 5†	3 2*
Springs Mines	14 3*	14 [illegible]		14 6*	14 [illegible]	—
Steyn Estates		8 [illegible]				—
Sub Nigels	12 [illegible]	12 [illegible]	11 [illegible]	12 [illegible]	11 6	11 3
Swaziland Tins	[illegible]	41 [illegible]	[illegible]	[illegible]	[illegible]	39 [illegible]
Transvaal Coal Trust	35 [illegible]	35 6†		35 [illegible]		—
Transvaal G.M. Estates	56 [illegible]	[illegible]				—
Tudors					2 6†	—
Van Dyks		1 4*		1 6*		1 [illegible]
Van Ryn Deeps	42 3	43 [illegible]	43 3	43 9	43 9	43 [illegible]
Village Deeps	36 0†	—	36 0†	36 6†	36 [illegible]†	35 6†
Village Main Reefs		32 6*		—	—	—
Vogelstruis Cons. Deeps	—	—	—	—	—	1 6*
West Rand Consolidated		—	—	7 [illegible]	—	7 6*
Western Rand Estates	4 0†	—	4 0†	—	—	—
Witbank Collieries	—	55 6†		—	46 0*	43 9†
Witwatersrands	69 6*	69 0*	—	71 6†	68 6*	71 6†
Witwatersrand Deeps	55 9*	55 9	55 6	56 [illegible]	54 3	53 [illegible]
Witwatersrand Townships	—		20 [illegible]*	20 0*	—	—
Wolhuters	14 [illegible]	13 9*	14 6†	14 6†	13 3*	14 6†
Zaaiplaats Tins	32 6*	32 6	32 3*	32 0*	31 3*	30 9

*Buyers. †Sellers. ‡Ex dividend.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

Feb. 27. Southern Freeholds; South Deeps; East Rietfontein Syndicate (annual).
March 13.—Worcester Exploration (annual).
March 16.—Robinson; Crown Mines (special).
March 18.—Anglo-French Coal Estates (annual).
March 20.—Apex; New Kleinfontein; Benoni Consolidated (special).
March 27.—Simmer Deep; Jupiter (annual); Wolhuter Gold Mines; Buck's Reef (annual).
March 31.—Cassel Coal Co. (annual).

The best "Reef Traveller" is the *South African Mining Journal.*

MINERS' PHTHISIS BOARD.

WARNING.

It has come to the notice of the Miners' Phthisis Board that certain cases have occurred in which money has been obtained from applicants to the Board by persons falsely representing themselves to be in a position to forward or facilitate their application, and that in one case at least a miner has been induced to pay as much as £28 for this purpose. Applicants are earnestly warned against paying or promising anything whatever to such persons, and are requested to note that no advantage is gained under any circumstances by not approaching the Board direct. The Board does not give prior consideration to any agents, but every application is dealt with in its turn.

H. C. FLEISCHER,
Acting Under-Secretary for Mines and Industries.

Department of Mines and Industries, Pretoria.

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"Imperial," Three-seater with Two-seat Dickey.

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Automobile Notes.

The taxation of motor-cars under the new Ordinance, the publication of the draft Road Ordinance, and the great development of motor traffic that is taking place in South Africa, have all combined to focus the attention of road users upon the deplorable condition of the roads of the Union, more especially in regard to those in the country districts, says the *Cape Times*. In the past the voice of the motorist has been lifted in vain, whether in entreaty for better treatment, or in remonstrance for injury sustained. In reply to his plaint, he has been curtly informed that the roads were not made for him, that he was an unwelcome intruder, and that the more he suffered, the better pleased would the Divisional Council ratepayers be. This is all going to change. Not because the ratepayers have changed their views to any great extent—the motor-car is detested in the country by the majority as heartily as ever—but because the motorist is now a heavily-taxed individual and is out to get back the value of his tax, or as much of it as is possible, in decent roads. Moreover, there are being added to the ranks every day recruits from the farming community, and there is no argument more likely to convince these gentlemen that we are lamentably behind the times in the matter of roads than the possession of a motor-car.

* * * *

It is undoubtedly to the farmer that we must look for the betterment of our country roads. It is he who rules in the Divisional Councils, and the only way to convert him from the belief that any road that is good enough for a wagon is good enough for other classes of vehicles, is to get him to ride in the best of all vehicles—the motor-car—over the same roads. Many farmers are buying cars, and all who do so become converts on the road question.

* * * *

So far as can be gathered, the following is a complete list of motor-cycling clubs at present in existence in the Union of South Africa:—Cape Peninsula; Eastern Province; Port Elizabeth; East London; Diamond Fields, Kimberley; Natal Motor Club, Durban; Pietermaritzburg; Orange Free State Automobile Club, Bloemfontein; Pretoria Motor Club; Rand; West Rand; Krugersdorp; Benoni and District; Volksrust; Premier Mine; and, in process of formation, a motor-cycling club at Potchefstroom. Thus in the Cape Province there are four, in Natal two, in the Orange Free State one, and in the Transvaal six and one mooted.

Fabric Clutch Linings.

Many motorists in recent years (says *The Autocar*) have replaced the original leather linings of their clutches when worn out by one of the many excellent fabric linings now on the market, but the results obtained have not always been as successful as anticipated. There are various reasons for this. In the first place it should not be forgotten that the coefficient of friction between fabric (such as Ferodo or Raybestos) and cast iron is considerably greater than that between leather and cast iron. The effect is to make the clutch fiercer. The correct remedy is to alter the angle of engagement of the male into the female portions of the clutch, this angle being distinctly less in the case of the fabric linings. The difficulties in the way of reducing the angle are, however, too great to be worth troubling with, and I have found an almost certain cure in two other directions. First, the spring pressure should be reduced until the clutch is almost on the point of slipping when the car is being driven under full load up a steep hill. Secondly, and most important, the area of contact of the two surfaces should be decreased. It is rather a matter for experiment to discover how much they may be reduced. As a basis for experiment, I have found that it is generally effective if three strips of the fabric lining, one inch in width, be cut out. Of course, the reduction should be made from places equally spaced round the circumference, and it will generally be found necessary to insert a few more rivets where the cuts have been made. The strips should, of course, be removed from across the cone, that is to say not circumferentially.

Light Car Running Expenses.

Mr. J. Shaw writes to *The Motor*:—Knowing practically nothing about a motor-car, I bought, in July, 1912, one of the last (if not the last) 6 h.p. cars supplied by the Rover Company. I took delivery on July 22, 1912. I drive and clean the car and do all minor adjustments, with the exception of repairs done by the agents through whom I got the car after an accident, and no one else has handled it. As an example of what this little car will do, I am proud to point to a trip from Preston into Scotland, as far north as Killin (Loch Tay), through the Lake district going and over Shap returning, six days' running, distance 600 miles, petrol consumption just under 16 gallons, and not a falter. Of course any records of a 6 h.p. Rover are not likely, owing to the fact that the car is not being manufactured now, to influence present light car buyers. My object in writing you is to show that motoring with a small car is not necessarily expensive. If you consider my record worthy of publication, you are quite at liberty to publish it. I enclose an account of my payments from the time I received the car, which cost £150 without lamps, tools, etc. I enter in my log-book every payment immediately, as I think that by so doing one can better check and limit expenditure.

Running Costs.

Record of payments in connection with 6 h p. Rover car. Distance: July 22, 1912, to December 31, 1913, 4,697 miles:

Car	£150	0	0
Petrol (130 gallons)	10	5	0
Oil and grease	1	13	6
Repairs to back axle and wing owing to accident	5	2	6
Tyres: Spare inner tube, repairs to tubes and covers, two new tyres, three old tyres retreaded, sundries, solution, etc., pressure tester, etc.	*8	15	8
Accessories:			
Lamps	3	12	0
Spare wheel and tyre, horn, jack, pump, tools and materials, as washers, nuts, etc.	9	18	0
Ignition: Charging of cell (accumulator) and spare dry cell	0	12	0
Housing:			
Built a lean-to shed in corner of large neighbouring yard; timber, etc., for shed	3	0	0
Ground rent, 13s. per annum (18 months)	0	19	6
Garage on various holidays	0	12	0
Cleaning materials (dusters, sponge, polish, etc., from household supply), say	0	5	0
Insurance (a weak spot this, you no doubt will say)	0	0	0
Registration	1	0	0
Tax (two years)	4	4	0
Licence (two years)	0	10	0
	£50	9	2

*With ordinary care, no new tyres will be required in 1914. Car almost as good as new; paint in excellent condition.

AMUSEMENTS.

NEXT WEEK'S PROGRAMME.

His Majesty's—Williamson's Gilbert & Sullivan Opera Co.	8 15
Standard—Louis Meyer's Company	See bills.
Empire Varieties	8.15
Palladium	8 15
Carlton	7 to 11.15
Grand	7 to 11.15
Orpheum	7 to 11.15
Bijou	7 and 9

Geological Society.

The eighteenth annual meeting of the members of the Geological Society of South Africa was held in the Council Chamber, Chamber of Mines, this week. Mr. A. L. Hall presided. In the course of his remarks, in moving the adoption of the report and accounts, the Chairman said that a large number of specimens had been presented to their museum, but unfortunately the question of a proper museum building worthy of Johannesburg as the centre of the South African mining industry had made no advance during the past year. The enormous advantages, educational and otherwise, to the mining student, the prospector, and the scientific public generally of finding complete and representative collections and illustrations of the geology of South Africa adequately housed under one roof were sufficiently obvious. It was clear, however, that a small society like theirs could not be in a position to tackle a question of that magnitude, and was justified in looking towards the various public bodies of Johannesburg for practical support. At the conclusion, Mr. John Munro moved a vote of thanks to the President, and it was seconded by Sir George Albu. Sir George suggested that the Municipality should be approached with a view of obtaining a room or two in the new Town Hall for the housing of the society's specimens. Mr. McDonald was elected President for the present year.

According to an excitable contemporary, rock is being mined in Kilo, Belgian Congo, from reefs which run 60 to 70 per cent. gold, says the "Engineering and Mining Journal." " They treat the white miners well, pay £40 per month with board, wines and liquors free. An Australian said he had more champagne than he could use. The Belgians are making a road from Kilo to connect with the English road from Jinga, on the Great Nyanza. There is no doubt the Rand will have to take a back seat, for Kilo is the premier goldfield of the world. Until the Jinga-Kilo road is completed it would be impossible to get a mortar box into the country." Some of this sounds exaggerated, but the last statement we fully believe.

The Johannesburg Municipal Council has accepted the following tenders:—That of the British Westinghouse Company for six 500 kw. Rotary Converters complete with switchgear, for a total sum of £8,242, delivery to be given in 36 to 42 weeks. That of the same firm for spare parts for the above Rotary Converters, for a total of £187. The oscillograph and other instruments which are for the purpose of making investigations throughout the electric supply system will cost £273.

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Miners' Phthisis Board.

It has come to the notice of the Miners' Phthisis Board that certain cases have occurred in which money has been obtained from applicants to the Board by persons falsely representing themselves to be in a position to forward or facilitate their application, and that in one case at least a miner has been induced to pay as much as £28 for this purpose. Applicants are earnestly warned against paying or promising anything whatever to such persons, and are requested to note that no advantage is gained under any circumstances by not approaching the Board direct. The Board does not give prior consideration to any agents, but every application is dealt with in its turn.

A Mining Case.

In the Supreme Court, Rand Division, this week the case of the Liquidators of the Langlaagte Proprietary v. R. R. Hollins came up. This was the extended return day of three commissions which were sitting in Europe to take the evidence of Jacques Lebaudy and others in the action now pending with regard to the sale of the Langlaagte property. It will be remembered that the action is one by the liquidators for the rescission of the sale to Mr. Hollins on the ground that M. Lebaudy had no authority to effect the sale. Mr. Hollins is counterclaiming for some £300,000 damages for failure to transfer. By consent, on the application of Mr. Barry, the return day was extended to May 31.

Elandsfontein Estate Co., Ltd.

(INCORPORATED IN THE TRANSVAAL.)

Interim Dividend No. 51.

NOTICE IS HEREBY GIVEN that an Interim Dividend (No. 51) at the rate of 5 per cent. (One shilling per share) has been declared by the Board of Directors, payable on 5th March, 1914, to all Shareholders registered in the books of the Company on 28th February, 1914.

The Transfer Books of the Company will be closed from 2nd to 5th March, 1914, both days inclusive.

Dividend Warrants will be posted to Shareholders on the 5th March, 1914.

By Order of the Board,
The Consolidated Gold Fields of South Africa, Limited,
Secretaries.
per J. D. LOW.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
13th February, 1914.

Witbank Colliery, Limited.

(Incorporated in the Transvaal.)

DIVIDEND No. 18.

NOTICE IS HEREBY GIVEN that a Dividend of Twelve and One-half Per cent. (12½ per cent.) for the six months ending 28th February, 1914, equal to 2s. 6d. per share, has been declared payable to shareholders registered on the 28th February, 1914. Dividend Warrants will be paid out as soon as practicable after the receipt of London Transfer Returns to that date.

The Transfers Registers of the Company will be closed from the 2nd to the 7th March, 1914, both days inclusive.

By Order of the Board.
H. G. L. PANCHAUD,
Secretary.

Head Office:
Johannesburg, 13th February, 1914.

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Three facts regarding the Transvaal worth remembering:

(1) The Transvaal is producing over one-third of the world's gold output.
(2) Transvaal mines have spent 24 millions sterling on machinery and plant.
(3) The *South African Mining Journal* is the official organ of the Mine Managers' Association.

THE SOUTH AFRICAN
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Notes and News.

"Safety First" Lectures.

A lecture on "Mine Accidents: Their Causes and Prevention," will be given by Mr. A. M. Archbold, Deputy Inspector of Mines, Krugersdorp, on Wednesday, 4th March, at the Robinson Hall, Millsite, Randfontein. The lecture will be delivered under the auspices of the United Randfontein Branch of the Cornish Association, and Mr. William Hosken will take the chair. The "Safety First" Committee is taking a keen interest in the lecture, and we understand that it is the intention of the Committee to institute a series of lectures of a similar nature. Arrangements with that aim in view are now in a forward state.

* * * *

The Resident Engineer's Opportunity.

The recent curtailment of workshop establishments on the mines of the Rand has, of course, had the effect of considerably lightening the labours of the resident engineers. The fact is being used by engineers at head offices to stimulate the efforts of the resident engineers in the direction of saving labour, improving current engineering practice on the mines in all its phases, and generally throwing themselves into the work of securing greater economy and efficiency. It is recognised that the resident engineer by reason of his daily, intimate contact with the mechanical side of mining engineering and metallurgy on the mines is in a unique position to forward the movement to reduce working costs. As one leading consulting engineer put it in his last annual report: "In future the engineer will figure prominently in the mechanical replacement of labour, and the mines are fortunate in having resident mechanical engineers with wide experience, who are keenly interested in their work. The efficient manner in which the plants are kept in continual operation testifies to the vigilance and skill with which the intricate machinery is attended to, and it is apt to be forgotten to what extent the mines are indebted to the unrelaxing efforts of the mechanical engineer and his skilled assistants." In future it would appear that something more than merely "keeping their plants in continual operation" will, therefore, be expected of the resident engineers. The object lesson recently afforded by the resident engineer who saved his group thousands annually by the results of his observations and research has not been lost on the directors, and great things in the way of labour-saving devices and reorganization of methods are expected from the resident engineers in consequence. Whether, in the circumstances, too much is not expected is a side of the question that may profitably be threshed out at another time.

* * * *

An E.R.P.M. Innovation.

The East Rand Proprietary Mines announce an innovation in regard to the hearing of employees' grievances. A board, constituted of employees, is to be appointed to examine all the workmen's complaints, and to sift them before presentation to the General Manager. The experiment will be followed with interest and sympathy.

* * * *

More Misrepresentation of the Rand.

It is becoming increasingly difficult to keep track of all the calumnies on the Rand that appear in the overseas press. The *London Mining Journal* translates the following notice, published in the *Montan Zeitung* of February 1:—

"According to information obtained by the Austrian Board of Trade, the leading South African mineowners intend to replace the miners who have been participating in the late strike by indentured Slav labour at lower wages, recruited from Austria and Hungary. Such labourers would be exposed to an interrupted series of serious attacks, in addition to being regarded as men of low degree, more like Kaffirs than like white men. In cases of serious disturbances, the occurrence of which may always be expected in those parts, their very lives would be in jeopardy. Besides, being ignorant of the language of the country, they would be, when signing their contracts, entirely at the mercy of by no means scrupulous mineowners and agents, with the result that they might even be deprived of the means of legal recourse. Finally, it has to be pointed out that according to the teachings of experience the miners in the Rand are liable within a short space of time to fall victims to phthisis. Offers of employment in the South African mines ought not to be accepted."

To this we can only say that the Austrian Board of Trade is singularly misinformed or at best has only got hold of an old idea abandoned ten years ago. Indeed the whole paragraph would be simply ridiculous were it not for the fact that it furnishes a typical illustration of the sort of misrepresentation of the Rand that from time to time goes the round of the European Press. It seems to be nobody's business in particular to correct these garbled misstatements, and the extraordinary thing is how the London offices of South African companies and the Chamber of Mines representatives allow them to pass unchallenged. In view of all the untruths and exaggerations that have appeared in the European papers of recent years regarding the Rand, the wonder is not that the reputation of the industry is bad, but that it has a shred of reputation left at all. The Chamber of Mines has lately taken to writing public letters to the Rand Press correcting the more blatant misstatements made regarding the industry. To be consistent the Chamber should, through its agents, protect the good name of Rand mining, in the even more important field of European investment by "nipping in the bud" the harvest of calumny that springs eternal in the Overseas Press.

* * * *

January Mineral Statistics.

The coal output for January was 657,945 tons, value £174,971, a decrease of 99,451 tons, value £15,223. The Transvaal produced 389,505 tons, Natal 204,970, Free State 59,414, and Cape 4,056. Sales and shipments of copper, to which Transvaal and Cape contributed, amounted to 4,791 tons, value £131,049, an increase of 4,058 tons, value £113,261, and of tin 366 tons, value £38,613. The labour return shows 27,936 whites and 237,864 coloureds employed in mining in the Union. Whites show a decrease of 2,350, the number being the lowest on record for the past twelve months. Coloured show an increase of 4,533. The returns of white men employed are, of course, the average for the month, and compare favourably with those of the corresponding month of last year. It is not fair to compare them with the months immediately preceding, when the proportion of white men to natives employed was exceptionally high owing to the reluctance of the mines to "lay off" men.

* * * *

The Position at Greig Diamonds.

Washing operations were suspended on the property of the Greig Diamonds, Ltd. (Schweizer-Reneke district) some little while ago. One consideration which induced the management to cease working was the practical drying up of the Harts River, on which the company depends for water. There was some delay in connection with the erection of the new machinery, and an unfortunate accident to the manager further hampered the concern. The first washing operations with the new pan gave most encouraging results, but after the first few days' working very poor ground was met with and returns were disappointing in the extreme. There is, however, a distinct chance that the property will be re-opened and it is hoped that ground from other portions of the company's extensive claim area will yield better returns.

* * * *

Last Year's Diamond Output.

The official mining statistics for January include details of the diamond output of the Union for 1913, which record a total production of 5,163,546 carats, value £11,389,807, an increase of 91,664 carats, and in value £1,328,318, as compared with 1912. Details of the contributors are:—Transvaal, 2,156,897 carats, value £2,726,663; Cape, 2,461,892 carats, value £6,995,438; O.F.S., 544,756 carats, value £1,667,706. Important producing districts were:—Pretoria, 2,074,992 carats, value £2,320,787; Kimberley, 2,338,842 carats, value £6,297,641; Barkly West, 113,976 carats, value £664,066; Fauresmith, 437,484 carats, value £1,517,391; Transvaal alluvial diggings, 81,904 carats, value £405,876. These figures do not agree, for obvious reasons, with the diamond export figures from South Africa for the year.

* * * *

Refractory Ores.

A demonstration of a new process for the treatment of refractory ores was given a few days ago by the patentee and representatives of Refractory Ores, Ltd. Among the gentlemen present were an eminent London chemist who is spending a few months on the Rand on behalf of the Victoria Falls Power Company, and several well-known engineers and metallurgists who were keenly interested and of the opinion that the invention would practically revolutionise present methods of making refractory ores amenable to ordinary amalgamation. A company is being formed to take over the Woodbush Mine at Haenertsburg and erect a plant to utilise the existing water power for generating electricity. By this means ample power can be obtained for all machinery in connection with milling and the new process, and working costs will naturally be reduced to a minimum. It is considered that the refractory element in this ore, amounting to 2½ to 3 per cent. of copper, will, on recovery, pay the whole of the costs of mining and treatment, and the gold contents, 12 dwts. to 1 oz. per ton, will then be clear profit. There are, of course, immense possibilities in a cheap method of treating refractory ores, and if no unforeseen difficulties crop up, more may be heard of this company.

* * * *

Two "Gorgas" Reports.

The report of Surgeon-General Gorgas of the United States army, who was commissioned by the Transvaal Chamber of Mines to enquire into health conditions in and on the Witwatersrand mines, was, we learn, received by the Chamber prior to his departure on Thursday. Col. Gorgas and his assistants, Major Noble and Dr. Darling, have for some time past been investigating the great problems concerned with phthisis, pneumonia and other diseases on the Main Reef series, and the results of this research work and the recommendations arising therefrom will, it is hardly necessary to state, be awaited with the very greatest interest on the Rand. Pending the receipt of this valuable document, we may observe that Col. Gorgas's report on malaria and blackwater in Southern Rhodesia, addressed to His Honour the Administrator of that territory, is available for publication, and since it deals with a disease or diseases most detrimental to the development of the Chartered Company's territory, some mention of it is called for here. We write "a disease or diseases" advisedly, because there is much divergence of opinion amongst medical men as to whether blackwater fever is an aggravated form of malaria or whether it is a distinct and separate disease. Col. Gorgas does not share the latter view. He writes:—"Personally, I am inclined to think that blackwater fever is a phase of malaria. But whether it is due to the malarial parasite or a specific germ, is of no more practical sanitary importance than it is at present for us to know the specific germ of yellow fever. In both cases we know the measures that will prevent. This is the great point in practical sanitary science." Col. Gorgas's advice after investigation and travel in Rhodesia in company with his assistants may be compressed into the words, "Fight the Mosquito." In this he is travelling no new paths of counsel, and in regard to his recommendations as to the taking of quinine, the destruction of the anopheles and the protection of houses and huts against the entry of that murderous insect, he tells Rhodesians who have ears to hear nothing they have not known for a long time past. But by virtue of his great reputation as the man who made the cut through the isthmus of Panama possible by freeing the canal zone of disease and particularly tropical disease, the Surgeon-General's lucid and well-seasoned words are calculated to sink more deeply into the minds of the people than any of the recommendations of local doctors and public health officers. For this reason the Chartered Company's engagement of Col. Gorgas should prove excellent business, and we shall be disappointed if Col. Gorgas's advocated campaign of advertisement and publicity as to the habits of the anopheles and the best means of preventing fever does not soon bear practical result amongst the mining and agricultural communities of Matabeleland and Mashonaland. As to the towns, the Panama expert gives to the Municipality of Salisbury some advice at the end of his report. He writes:—" As an example to the rest of the community I would urge upon the Municipality of Salisbury that it free itself of mosquitoes. It cannot fail to have a bad effect upon a compaign of education to have a farmer from the malarial districts come to the capital and find mosquitoes as numerous as they are. The city is so favourably situated that very little effort on the part of the Municipality would bring this about." Col. Gorgas is clearly an optimist in regard to the future health aspect of Southern Rhodesia, in fact he feels confident that if the people can be so educated, that they will thoroughly carry out the protective measures advocated, " malaria and blackwater fever will at once begin to decrease in these districts, and within a few years disappear, as they have done in other parts of the world."

* * * *

Interesting Survey Work at the Springs Mines.

Some very important and interesting survey work has recently been carried out at the south shaft of the Springs Mines. The work in question has been the setting out of a line of connection between the north and south shafts, and since large tonnages of ore will be eventually conveyed through this incline by endless rope haulage, a considerable interruption in alignment at the meeting of the headings would be a serious matter. It was, therefore, wisely decided to employ the most accurate known method of continuing the surface survey into the underground workings, that is, by what is known as the Roberts Shadow method. The plumbing of the north shaft by the method, and the survey of the northern portion of the incline, were carried out some time ago, and it became necessary to ascertain the exact position of the southern portion which had been determined by ordinary survey methods not susceptible of great precision. This method, it may be recalled, was devised by Mr. F. A. G. Roberts, manager of the Knight Central G.M. Co., and was carried out by him in the making of connection between the Brakpan Mines shafts with such marked success.

* * * *

Miners' Federation and Non-Unionists.

From accounts to hand it seems clear that the Miners' Federation of Great Britain intends to proceed with a campaign against the employment of non-Unionists in the coal mines. The contention of the Federation is that the work of the organisation results in improved wages and conditions for all who are employed, and that all alike ought to contribute to the necessary cost of the organisation. This policy has found a measure of support among the miners, a number of strikes having taken place during the year against non-Unionists. It is stated that from the beginning of the year something like 100,000 members have been added to the strength of the Federation, and it is probable that 50,000 of these additional members have been brought into the Federation as a direct consequence of the non-Unionists campaign. Many of them had been members but had dropped out for non-payment and other causes. In some of the districts such men are being given the option of paying their arrears of contribution or rejoining as new members. The latter is in some districts an expensive matter and carries with it certain penalties. For instance, in Nottinghamshire the entrance fee is £1, and eligibility for the old-age pension of 5s. per week which is paid to disabled colliers of 15 years' membership at 60 years of age, in such cases dates only from the entrance fee payment. Thus, many men find it preferable to pay up the arrears of contribution. The other 50,000 additional members are mostly surface workers in districts which have thrown open their doors to such members. These results have not been secured without considerable cost to the Federation, and the loss of a good many working days to the miners. The majority of the disputes which have taken place in the mining industry between January and November may be traced to this cause.

TOPICS OF THE WEEK.

THE PASSING OF THE COLOUR BAR.

Evidence accumulates daily that the highly artificial and inequitable restriction known on the Rand as " the colour bar," must go. Mr. A. E. Payne, the energetic ex-President of the Mine Managers' Association, in his valedictory address last week—printed in full in this issue—put the facts very bluntly—the Labour people call it " brutally," doubtless because to them all economic home-truths seem brutal. Moreover, our enquiry into the problem and possibilities of reducing working costs has brought us face to face with this cardinal fact of the industry, that the first and surest way to economise lies in the industrial emancipation of the native. This truth comes to us in divers shapes and from many quarters. That it is both just and expedient there can be no manner of doubt. The same view would likewise appear to be taken by the Economic Commission, if rumour be true. It is whispered that the Commission is unanimously in favour of the industries of the country being allowed " to utilise the class and colour of labour best suited to the requirements of each." In other words, being sensible, logical, and far-seeing, they would sanction the extension of the native's sphere of activity and usefulness, the lifting or modification of the colour bar, and the abolition of " the artificially reserved white position." Of course, these changes were bound to come. They have merely been accelerated and precipitated by the events of the past year—events that compelled thought and forced into prominence the unpalatable realities of the situation. Thus, in the evidence given recently by the Chamber of Mines before the Economic Commission, emphasis is laid on the curious and unsatisfactory position that has arisen of underground overseers supervising the work of natives frequently more skilled than themselves. Further the opinion is expressed that so many natives are now so well trained in mining that they are in many cases as good, or better, judges as to safety underground than many of the only partially trained white men who are entrusted with the work of supervision. In the near future, according to the Chamber, the native will probably insist on a free outlet for his capabilities. Already that prophecy is being strikingly fulfilled, as may be seen from the report given in this issue of a recent meeting of coloured workers to protest against the industrial disabilities laid upon them in the Transvaal and the Free State. It may safely be said that the meeting in question and the petition to the Union Parliament to which it gave birth mark—to vary the metaphor—a turning point in Rand industry of the very greatest significance.

How the Government will meet this natural claim of the coloured workers for recognition on a basis of ability irrespective of colour remains to be seen. Certainly the Mines Department, under Mr. Malan's régime has shown itself anything but sympathetic towards that claim. As the Chamber of Mines in its now famous evidence pointed out, that the attempt to give special protection to the European has been up to the present supported by the Government is shown in the Mines, Works and Machinery Regulations. These explicitly require certain work to be done by white men, and there is also the anomaly that in two provinces of the Union of South Africa (Cape Colony and Natal) coloured persons are allowed to hold positions from which they are expressly debarred in the Transvaal and Orange Free State. The opinion is held by many, including eminent lawyers, that these regulations are *ultra vires*, though the matter has not been tested at law. So marked has been the hostility of the Department that it would not be surprising if the next general elections afforded the coloured voters at the Cape an excellent opportunity for airing this very just and well-founded grievance of their fellows in the Transvaal against the Government. In this connection it is noteworthy that the *Government Gazette* of January 27th last contained a list of Parliamentary voters for the Cape Province which shows that there are enough coloured voters in a considerable number of constituencies to turn the scale as between the Unionist and the South African parties. Seeing that there are about 350 coloured voters in the Malmesbury division it is surprising that, through changes in the Mining Regulations, its Parliamentary representative, Mr. Malan, has done more to drive competent coloured men out of the mines than any other head of the Mines Department since the War, excepting possibly Mr. Wybergh! For instance, the recent modification of Article 158 (10) in the Regulations, which aims at abolishing the boss boy system, shows the extent to which Mr. Malan has allowed the white labour faddists among his subordinates to have their way. Further, the elimination of the word "whilst" in Section 41 (1) is another instance of fresh disabilities being imposed under Mr. Malan's regime on skilled coloured men. Then again, the recent creation of the Blasting Certificate Commission with the President of the Transvaal Miners' Association as a member is directed chiefly against the coloured people. It is impossible to avoid the conclusion that the steady aim of the Mines Department in recent years has been to add to and aggravate the disabilities of skilled coloured workers on the mines of the Rand. People talk about the malevolent influence of the mine magnates, but in the making of the Mines Regulations their influence has been nil compared with that of the Transvaal Miners' Association. As we pointed out at that time, the extent to which the Mines Department and the T.M.A. are co-operating was shown very clearly in the early part of 1912 in the case of Rex vs. Brett and M'Phee, in which Mr. Jourdan, Inspector of Mines, relied on the officials of the T.M.A. to prove his case for him. The main object of that prosecution appears to have been to force companies to replace competent "boss boys" by white men. Indeed, were an impartial commission appointed to investigate the facts it is almost certain that it would be conclusively proved that the Mines Regulations have been used in recent years to further the views of white labour faddists. Many of the innovations directed against the skilled coloured men are of such a subtle character that in order to detect them it would be necessary to have on the commission a competent lawyer friendly to the coloured people, who could put his finger on the terms and clauses cunningly contrived to maintain the restrictive character of the regulations.

So much for the attitude of the Mines Department. More puzzling still, because one long hotch-potch of inconsistencies, shufflings and seeming contradictions is the confessed attitude of the Labour Party on the question. In January last, as everybody knows, it was publicly decided at the annual Conference of the Party, held in Pretoria, to admit coloured workers to the Trades Unions. That momentous decision was only arrived at after a very full and free discussion of the subject. No attempt was made to reconcile it with the known antagonism of the miners or —more wonderful still—with the famous "boycotting" manifesto issued last year by the Federation of Trades. The latter, it may be remembered, appeared in the *Transvaal Leader* of 13th January, 1913, in the form of a letter and a manifesto of the Transvaal Federation of Trade Unions. The letter was dated December 5th, 1912, and was signed by T. W. Mason, Organiser. The manifesto—which we reprint in full in this issue—was headed "An Appeal to the White Race." In the manifesto it was stated that the Transvaal Federation of Trade Unions having a membership of over 15,000 men employed in the various trades, had decided to institute a boycott of all employers of skilled coloured and Asiatic labour. The Federation called upon everyone to help them in their object—"the shopkeeper, by insisting on a white clause in his lease compelling the property owner to employ white artisans on repairs; the prospective tenant, by getting assurances that the house he wishes to hire has been built by whites and will be kept in repair by whites; and the white workman, by only giving his support to those who are prepared to help this scheme to maintain a white standard of living in South Africa." In the letter it was stated that as from the 1st December, 1912, any person, no matter what his trade, profession, or calling might be, who employed cheap coloured labour where skilled white labour should have been employed would be boycotted and his name placed on a black list which would be duly circulated throughout South Africa. In order to maintain the labour character of "Mr. Facing-Both-Ways," however, we find that in the *Sunday Post* of February 22nd, 1914, it was stated that in June last the leader of the coloured people on the Rand, Mr. C. M. Dantu, was invited to attend a meeting of the Strike Committee at Benoni, and was urged by Messrs. Bain and Crawford to organise the coloured workers on the Rand and call them out on the declaration of the General Strike. Apparently the reward of the coloured people was to be that, after the strike coloured tradesmen were to be accepted as members of the trade unions and have equal opportunity with the white workers. Following the same line of tactics, we find the Labour Party at the Cape encouraging the coloured workers there to join them in the recent strike. Thus *The Star* of February 19th, 1914, in reporting Mr. Burton's speech during the debate on the Indemnity Bill, had the following, *inter alia:* "Mr. Burton continued his quotation from affidavits and reports relating to the dock labourers' strike, in which Mr. Madeley was alleged to have told them 'Most decidedly the dock labourers must come out.' That was the affidavit, and, as a lighter touch, 'I heard Madeley tell the coloured audience that they were equally as good as Mr. Merriman.' Mr. Madeley had added 'They had as much right to ride in motor cars as any of the others.' The affidavit went on, 'I pointed out to him that the case was a bad one when white men stooped to work of that sort.'" So this is the attitude of the Labour Party—the hoary old opportunist trick of being all things to all men as it suits the convenience of the moment! From this welter of confused and conflicting Labour views and short-sighted Mines Department antipathy, the movement to abolish the colour bar, however, merely gathers momentum as it goes. Its actual attainment, of course, will entail no violent changes. Even the Chamber of Mines admits "the process would necessarily be a slow one—no sudden alteration of a radical character would be possible." But increased efficiency all round in regard both to white and black would be a resultant growth of a more speedy and vigorous description. From that would follow, as the night the day, the much desired reduction of working costs. And reduced working costs, it is now a commonplace of Rand economics, mean more capital for the country, more work for all, and general contentment and prosperity. Wherefore, the Colour Bar Must Go!

SOUTH AFRICAN TRADE IN 1913.

DESPITE the drought and the labour unrest on the Rand, South African trade in 1913 displayed all the symptoms of health and progress. Though only the preliminary figures for the whole year are yet available, they prove conclusively that the upward and onward march of trade has not been checked. Taking first the import figures for the Union, we find that in 1911 the imports amounted to £34,945,447. They rose in 1912 to £36,009,841, showing an increase of over 3 per cent. Last year they reached £38,526,381, showing an increase very slightly under 7 per cent. Fencing material, water-boring machinery, windmills, sawing machinery, and presses for hay and wool all show substantial advances and manures and fertilisers have gone up 50 per cent. A considerable increase in the importation of mining machinery may be interpreted as indicating confidence in the future of the mining industry, notwithstanding recent events. Evidence of sustained spending power in the community at large is afforded by the remarkable increase in the number and value of motor vehicles imported. The following figures for the last three years speak for themselves. Motor cars and parts: 1911, £369,997; 1912, £577,924; 1913, £1,100,867. Motor bicycles and parts: 1911, £72,938; 1912, £154,236; 1913, £223,524. Turning to the exports we find that the exports of South African produce in 1911 amounted to £55,389,363. In 1912 they rose to £61,594,113, representing an increase of rather more than 11 per cent. In 1913 the figures rose again to £65,114,634, representing an increase of only 5·7 per cent., or at approximately half the rate of the previous year's advance. There are notable advances recorded in most other categories, including bark, blasting compounds, in most other categories, including bark, blasting compounds, coal, copper ore and regulus, dried and preserved fish, glycerine, tin ore, and tobacco. Excluding gold and diamonds, the export trade of the Union rose from £14,098,491 in 1912 to £15,508,710 in 1913, an increase of £1,410,219, or at the rate of just 10 per cent., a very satisfactory rate of increase. These figures, taken in conjunction with the Bank clearing returns for the chief centres indicate that however disappointing business may have been to individual firms owing to the pressure of competition, the volume of trade far surpassed that of former years, and points to the growing prosperity of the country.

What is Wrong with South African Mining?---III.

Selection of Representative Views—Taxation and the Colour Bar—Need of Reorganizing the Native Labour Force—Railway Rate Anomalies.

In view of the numerous fears regarding the decline of mining on the Rand expressed in several influential quarters of late, and, further, of the growing popular belief that mining in South Africa is rapidly deteriorating, and prospecting losing its attractions, we have invited for publication the views of leading engineers and mining men on the following points:—In Regard to the Rand: (a) *Do you think it would pay the Government to prolong the life of the fields by reducing indirect taxation?* (b) *Should the Government help the industry by direct financial assistance or scientific research work in the form of the Mines Trials Committee or some similar body?* (c) *By using its influence in the sphere of unskilled labour, can the Government do anything to prolong the life of the industry?* (d) *Can you suggest any other way by which the Government can help to attract capital, open up dormant mining areas and so to prolong the life of the industry?* (e) *Do you foresee any opening for further reduction in working costs, and if so, in what direction? In Regard to the Rest of the Union and New Discoveries:* (a) *Do you consider the Government should encourage prospectors and "small men" by:* (1) *Reducing or abolishing claim licences?* (2) *Throwing open all farms to prospectors, with due safeguards?* (3) *Foregoing transfer fees?* (4) *Direct financial assistance?* (5) *Waiving mining regulations?* (6) *Or in any other way? And, generally would you favour a Government Commission to enquire into the foregoing?*

BELOW will be found a representative selection of the views expressed, dealing with taxation, the colour bar, railway rates, and reorganization of the native labour force. A further instalment will appear next week.

SOME REPRESENTATIVE VIEWS.

Mr. G. A. Chalkley, Manager of the Knights Deep, writes:—

"Regarding your circular of the 18th instant, I beg to reply thereto as follows:—

Question (a).—Yes, certainly.

Question (b).—Would help.

Question (c).—The greater the supply of unskilled labour the cheaper it would be, thus lowering the working costs.

Question (d).—Naturally the lowering of the costs; more payable ground will be available for mining.

Question (e).—Yes, greater use of hammer type drills which are improving every year, more settled labour conditions resulting in increased efficiency, cheaper power by reduction of railway rates on coal.

Regarding new discoveries: (a) I am afraid I do not know enough about outside conditions to give a fair, intelligent reply."

Mr. S. C. Black, Managing Director of the Transvaal and Delagoa Bay Investment Co., Ltd., writes:—

"I have to acknowledge receipt of your letter of the 18th February, requesting my views on a few points raised therein. I have pleasure in supplying the following:—

(a) The present incidence of taxation might profitably be reviewed, and conditions remedied where they can be proved to be burdensome.

(b) There is no need for the Government to do so; the mines are well able to support scientific research work.

(c) Yes.

(d) The Government can do much to attract capital towards the exploration and development of new mining areas, but capable and honest direction on the part of those directly responsible to investors can do much more! Dormant mining areas could only attract capital, if a fair return on investment is assured. The present working costs are too high for the exploitation of low grade propositions, *i.e.*, anything below 5 dwts. per ton recovery.

(e) Working costs might be reduced in various directions. Briefly, there is no reason why the cost of living should be higher in South Africa than in Australia and New Zealand, and with such reduction in the cost of living, especially on the Witwatersrand, and provided artificial barriers to the employment of available labour are removed, ore bodies now classed as unpayable would be brought into the payable zone of work.

New discoveries: A Government Commission might very well be appointed to deal with your queries hereunder. My own impression is that the work of the Government's own geological staff might be supplemented and supported by boring in several directions, notably towards the discovery of the Main Reef series, between Randfontein and Potchefstroom, for here is a field full of immense possibilities for the future of gold mining in the Transvaal."

MR. J. A. NESER'S VIEWS.

Mr. J. A. Neser, M.L.A., Chairman of Committees in the House of Assembly, writes: "Your circular letter of the 18th inst., concerning the apprehended decline of mining on the Rand is to hand. I much regret my inability to adequately reply thereto, because I am not sufficiently acquainted with mining matters. It seems to me, however, that if working costs could be reduced by the reduction of direct or other taxation, not only the mining industry would benefit, but other industries would spring up. I refer in particular to the reduction of railway rates. In my mind there is no doubt that all industries should be fostered as far as possible by financial and other assistance, for scientific research work; but how the influence of the Government in the sphere of unskilled labour could prolong the life of the industry I fail to perceive, because it seems to follow as a natural corrollary that the more labour there is the speedier the mines would be worked out. Not being a mining man, I cannot foresee how working costs could be reduced. I am not sufficiently well acquainted with the Mining Laws of the various Provinces of the Union, other than the Transvaal, to be able to express an opinion about the reduction and abolition of claim licences, but I would be opposed to the throwing open of all farms to prospectors. One must have some regard for agriculture, and it would be a nuisance to have people crowding in on all farms for the purpose of or on the pretence of looking for minerals. Transfer duty should certainly be abolished. I think it an ancient and barbarous tax on the acquisition of land."

A LABOUR VIEW.

Dr. C. H. Haggar, M.L.A., writes:—"Except from the economic standpoint, incompetence disqualifies me, where questions of mining are under discussion. The history of mining makes one exceedingly suspicious of all scare-mongering, especially when financial considerations inspire. In many instances, it has been a case of: 'When fortune means to men most good, she looks upon them with a threatening eye.' How many times have mining areas 'petered out' when some new 'strike' has been made? But how can the 'life' of such a field as the Rand be calculated? As a matter of economic principle, it is unsound to ask that Government shall give a guarantee against the risks of speculation entered upon for purposes of private profit at the cost of the State. And when does a proposition 'pay'; when it gives a fair return for actual working costs, or when there is a substantial dividend besides, calculated on the watered capital? Shall 'working costs' or required dividend be the dominating idea? At present Rand mining does not return a due proportion to the State: whether the proportion due shall be obtained by 'direct' or 'indirect' taxation is a question of expediency only. The alienation of immense natural resources can never be beneficial to the State. State revenues, first and foremost from State resources. Provided that any 'discoveries' are not allowed to pass into private hands, spend such sums as a board of competent men might agree to. Unskilled labour has already been the curse of this country, as it has of every land in which it has been tried. 'Capital,' except in book figures, has very little reality; as the means of production of greater wealth, as Professor Karl Pearson informed the magnates, an increase of industrial efficiency is the need. ' Capital ' has been provided without a penny in cash, without a penny paid in interest. Why should not Government do with mines, as Australia and New Zealand have done with canning, financially assist so as to directly neither gain nor lose?

Re Discoveries.—

1. Adopt Australian method of miner's right;
2. Certainly;
3. Nominal, as in the case of the Torren's Land Act;
4. As a returnable investment when, in the opinion of competent men, justified;
5. Provide suitable and special regulations;
6. Why not the Australian method of " tributing "?

" A proposition which will not pay ' working expenses,' which simply consumes ' capital,' must be carried on by imposing upon some other which does pay, and should therefore be closed down."

Railway Tariffs and Taxation.

To the Johannesburg Master Builders' Association we are indebted for the following illuminating extracts bearing on the taxation of the mining industry through railway tariffs. The Johannesburg Master Builders' Association in its evidence presented before the Economic Commission on behalf of the Association on Monday, November 24th, 1913, state, *inter alia*:—

> In submitting this evidence, our Association emphasises that unless certain alterations are made, particularly in the railway tariffs, the industrial area of the Central Transvaal cannot possibly find means for the establishment of industries which might, and should, be worked within its own areas. It is, therefore, necessary in the evidence which we present to treat as the groundwork of our claims the situation and standing of certain industries at present dormant on account of these railway rates, and which cannot possibly progress unless they receive more equitable treatment from the Union Government, as the Act of Union debars any competitive railways being established either by private individuals or by Provincial Governments. On this, therefore, hinges the economic progress of Johannesburg, and this must be dealt with fully and sympathically, as, in our opinion, it is the primary question that requires attention if industries are to be effectively established within the area of the Central Transvaal. We propose, therefore, to deal first with and present evidence on the cost of production and the causes affecting production in the particular instance of structural engineers, steel girder contractors, blacksmiths or subsidiary trades, which can be reckoned under the heading of engineering. We propose, also, to submit general evidence on the principal and direct causes affecting the cost of production in engineering and in other industries in the Central Transvaal. The direct causes why local factories cannot compete with coast or foreign firms are:—First, Railway freight on basic material being not only high, but in many instances higher than the manufactured goods. Second.—No consideration is given to the fact of the basic material being usually carried in train loads, therefore easy to handle, of low value, and carried over lines on which the traffic is dense, against, in the case of manufactured articles, of smaller loads, higher value of goods, and in most cases filling the trucks to only one half of their carrying capacity. Third.—We must also deal with the interest on railway freight on stocks held by local manufacturers, this being particularly heavy on this class of low-priced basic material, the sea freight and railway charges to Johannesburg amounting to as much as the original f.o.b. cost. We emphasise this as one of the principal factors militating against local manufactures, as the stocks required to meet the various specifications necessitate not only a large original outlay but a further cash outlay for freight and railway rates, as we have already pointed out, equal to the original cost. Fourth.—Local manufacturers have further to bear railway freight on wastage, which amounts to a considerable sum. Statements show, if anything, lower than the average, which amounts to 7½ per cent. The foregoing remarks apply specifically to the structural steel trade, in which we have shown the deterrent effect of excessive railway rates, and we might also instance the following:—In the case of windmills and fencing, the manufactured articles, as will be seen from Statement 3, are carried at considerably less cost than the basic material, fencing for State Schools, etc., composed of angle iron, tee iron and plates being carried from the coast for £1 1s. 3d. per ton against £3 10s. 10d. and £5 for the basic material. Our members are now fixing windmills made at the coast, on which the freight from Capetown (958 miles) is 77s. 6d. per ton, against the aforementioned rates for basic material from our nearest port, 366 miles distant. We must now deal with the general causes affecting cost of production in other industries as well as in the steel trade of the Witwatersrand. These, briefly, may be summarised as follows. First.—The general high transport rates on all goods to the competitive areas, as shown by the railway tariff book. Second.—The huge profits on main trunk lines serving the competitive area from the coast. Third.—Neglect of the natural law which governs the freights of competitive railways that: " A dense traffic means full vehicles and big train loads. It means also that cost of capital and road maintenance can be spread over many units of traffic, consequently it means small expenditure and correspondingly *low* charges." Density of population and the consequent high cost of living is minimised in other countries by this accepted natural law. Fourth.—Cumulative charges for municipal service, i.e., rates, taxes, power, also rents, etc., caused by high transport rates in the initial stage of construction and high railway profits, especially on goods which rates from Delagoa Bay are still the same as charged prior to the war, despite a reduction in mileage from 395 to 366. Fifth.—Limit of area for disposal of goods manufactured here, as raw material has to be brought and retransported, against the direct transport enjoyed by the coast and the importer. Sixth.—Continuity of employment (establishment charges being fixed) would mean economy on manufacture, but as already pointed out, local factories are now only employed fulfilling urgent orders, and the best labour effect can only be obtained by continuous employment under competitive conditions. Seventh.—On the Witwatersrand white skilled labour is solely employed as skilled artisans, which means a necessarily higher rate of wages than that given to coloured artisans, the requirements and tastes of the European workman being naturally on a higher scale. Eighth.—Additional charges in the labour area of the Witwatersrand for pass fees for native unskilled labour of 2s. per month, as against 1s. in other areas and " nil " in rural districts. Ninth.—The imposition of the annual contribution of £455,496 to the Consolidated Revenue Fund, as explained on page 2 of the General Manager of Railways' Report, 1911. Tenth.—Higher railway rate charges on imported goods after paying duty. For example, sugar, wheat and flour. Eleventh.—Higher charges on inland manufactured goods in comparison with those of the Cape Province and Natal. On the foregoing factors we respectfully base our case as sufficient argument that before the economic conditions of the Central Transvaal as a manufacturing centre can be improved, the cost of transport must be materially reduced. It means, briefly, a system of taxation before production, which, to our minds, is one of the worst form of taxation. We have particularly noted structural steel industries on the Witwatersrand, being convinced that with fair treatment these are capable of great expansion from which other trades, including our own, must in the end greatly benefit. We have to point out that from east and west of the Reef there are no less than, roughly, 600,000 tons of steel work, on which the average of at least £1 per ton has been expended in white labour, and our share on this amount of money amounts to a very small percentage only. This taxation before production affects the greatest industry in South Africa to a marked degree, inasmuch as it prevents development, adds considerably to the cost of working of all mines, and practically debars the working of low-grade mines. Briefly, we believe that in the foregoing evidence we have submitted substantial facts in favour of an alteration which will beget prosperity in the future to Johannesburg, and in a very marked degree tend towards the general prosperity of the whole of South Africa.

Voorspoed Diamonds.

In the house of Assembly last week, Mr. H. P. Serfontein (Kroonstad) asked the Minister of Mines and Industries: Whether, seeing the Voorspoed Mine has been closed for more than a year, and the Commission appointed by the Government has reported that the mine is worth working, and that its being closed means an enormous loss to the Treasury as well as the total ruin of the poor people who were employed in it, and is further detrimental to the people of the immediate neighbourhood, especially the farmers, the Government intends to take steps to have the mine reopened? The Minister of Mines and Industries replied: The question of the working of the Voorspoed Mine has given rise to a difference of opinion with the present owners. All such differences must be referred under Section 52 of the Precious Stones Ordinance No. 4 of 1904 of the Free State to a Board consisting of an equal number of representatives of the owner and the Crown, and a Chairman who is appointed by these members. Communications have taken place with the owners with regard to the appointment of a Board under this section, and the name of the representative of the owners has now been submitted, and the Government is taking steps to nominate its representative to enable the Board to proceed forthwith with its inquiries.

The first sale of Congo diamonds were exported. 6,795 carats were offered in three parcels. The first consisted of 1,723 of best quality, 1,820 of average, and 3,252 carats of inferior value. The highest tender was that of two Antwerp firms, the average price being 24s. per carat, and the amount £8,159 9s. The next tender was from two Brussels firms for £7,880. This result is considered as very satisfactory.

THE COLOUR BAR AS A BRAKE ON RAND PROGRESS.

New Movement by Coloured People to Attain Industrial Rights—Petition to Parliament Attitude of the Labour Party—"Mr. Facing-Both-Ways."

THAT the movement to emancipate the native worker on the Rand from the shackles that bind him is growing apace may be seen from the following extract from the *Transvaal Leader* of February 23, reporting a meeting of coloured people; and the petition they are presenting to Parliament.

CRY OF THE COLOURED MAN.

RESTRICTIVE REGULATIONS

A MEETING OF PROTEST

An audience of fully 600 coloured men from Johannesburg and the Reef, assembled in the Pilkington Hall, Ferreiras, on Saturday evening last. They were there in response to a circular which informed them that the meeting was "for the purpose of petitioning the Government to remove the disabilities which we suffer under through the Mining Regulations of the Transvaal, preventing us from earning our living by following our trades, solely on the ground of colour, without reference to competence or ability." The circular was addressed "to the coloured people of Johannesburg and the Reef," who were urged to "bring all your friends, as this meeting is of great importance to us, affecting our very existence." It should be added that the meeting was held under the auspices of the African Political Organisation, of which Dr. Abdurahman is the recognised leader. The chair was taken by Mr. C. M. Dantu, himself a coloured man, and the local representative of the Organisation.

The following resolutions were adopted unanimously and enthusiastically:

> This meeting of Cape coloured people earnestly desires to call attention to the disabilities they labour under in connection with the Transvaal Mining Regulations, under which they are debarred from certain work solely on the ground of colour, without reference to competence or efficiency. This meeting prays the Government to amend the Mines, Works and Machinery Regulations so as to eliminate these unjust colour discriminations, and to substitute competence and efficiency as the qualification, and not colour.
>
> That the Chairman is requested to send the foregoing resolution to the Press, to the Prime Minister, the Minister of Mines, Mr. Merriman, Mr. Jagger and Dr. Abdurahman.

The resolutions will be enforced by a petition to the House of Assembly, which, it is understood, has been signed by more than a thousand coloured men. The text of the petition is as follows:—

To the Honourable the Speaker and Members of the Legislative Assembly of the Union of South Africa in Parliament assembled. The petition of the undersigned residents of the Transvaal Province respectfully sheweth:—(1) Under the Mines, Works and Machinery Regulations of the Transvaal, coloured persons are placed under serious disability solely on the ground of colour and without reference to competence or ability. (2) The Mining Regulations are framed in a manner which prevents your petitioners from earning their livelihood by following their trades such as carpenters, engine drivers and similar occupations. In this respect your petitioners would humbly venture to refer to the Regulation in question. Section 285 whereof reads: "Certificates shall not be granted to any coloured person in the Transvaal and the Orange Free State, and certificates granted to any coloured person in any other Province shall not be available outside such Province." Your petitioners would further respectfully invite your earnest attention to the definition given to the terms "banksman," "ganger" and "onsetter" appearing in the said Regulations. (3) Your petitioners are denied blasting certificates, even though they may have held such certificates in the Cape Province. Wherefore your petitioners earnestly pray and respectfully offer the suggestion that wherever the term "white appears in the said Regulations, the term "competent" might be substituted, and that wherever the distinction is made against the coloured worker to his detriment the differentiation might be removed. And for this act of justice your petitioners shall for ever pray, etc.

It has not yet been decided which of the members of Parliament shall be invited to present the petition. The names of Senator Schreiner and of Messrs. Jagger and Merriman are mentioned.

THE ATTITUDE OF THE TRADES UNIONS

An instructive sidelight on the attitude of the Rand Trades Unions towards the claims of the coloured worker is thrown by the following quotations. The first is from the *Sunday Post* of 22nd February, 1914, the second from the *Leader* of January 13, 1913.

COLOURED WORKERS AND STRIKE

LABOUR'S ATTITUDE.

ATTEMPTS MADE TO BRING THEM OUT.

In Mr. C. M. Dantu the coloured people have found a leader who is himself a fully qualified "tradesman," and by whom therefore the disabilities which exclude coloured men from open competition with the white members of trade unions is accounted a personal grievance. A glimpse behind the scenes at the Trades Hall last June was disclosed by Mr. Dantu to a "Sunday Post" representative. In that month he was summoned to the Trades Hall to meet the Strike Committee, at which Messrs. Bain and Crawford, and some other well-known Labour leaders, were present. He was asked if he could organise the coloured workers in Johannesburg and along the Reef, and call them out when a general strike should be declared. Mr. Dantu declined to consider the proposition unless the Labour men would put it in writing that they would accept the skilled coloured tradesmen as members of trade unions, and give them equal opportunity with the white workers. This was refused as premature, on the plea that the coloured men must prove themselves first in the strike. Mr. Dantu's retort was that the coloured men had shown their quality in the typographical strike at Capetown and again in the wharf strike at Port Elizabeth, where the coloured men were dismissed and their places were filled by white "scabs," to employ the graceful jargon of the Trades Hall. Mr. Dantu denounced the decision of the Labour Party to admit coloured men to its ranks as a piece of unmitigated hypocrisy, and expressed the emphatic opinion that as long as the African Political Organisation had a representative on the Rand this transparent manoeuvre would not capture a single coloured vote for the Labour Party at the Cape.

The following, from the *Transvaal Leader* of January 13 1913, is difficult to reconcile with the foregoing:—

WHITE LABOUR POLICY

RECENT APPEAL

PROPOSED BOYCOTT

The subjoined letter and manifesto have been circulated in Johannesburg:

"The Transvaal Federation of Trade Unions, Johannesburg, December 5th, 1912.—Dear Sir,—I have been instructed by the Federation of Trade Unions to bring to your notice their resolution, having as its main object to prevent the employment of cheap coloured labour in all skilled trades. Knowing that you have the interests of the white inhabitants of the Transvaal at heart, my executive desires to request your personal co-operation in making their undertaking a success, and in boycotting all such builders, owners, merchants, agents and others who, for the purpose of saving a few pounds, are prepared to sacrifice the heritage of the white people of South Africa. It is the intention of my executive to frame a list of all those persons who have promised their co-operation, and for this purpose I shall be obliged if you will sign your name and address on the enclosed postcard, and post the same without delay. I may mention that as from the 1st December, 1912, any person, no matter whatever his trade, profession or calling may be, who employs cheap coloured labour where skilled white labour should have been employed will be duly boycotted and his name placed on a black list, which will be duly circulated throughout South Africa. Thanking you in anticipation.—I remain, yours faithfully, T. W. MASON, Organiser."

AN APPEAL TO THE WORKER

The following is the text of the manifesto:—"The time has now arrived when, in the interests of the white race, it is necessary to make a stand to maintain the position of the white artisans of the Transvaal. Step by step the white artisans have been driven from the coastal towns owing to the encroachment and unfair competition of cheap coloured labour. Now we are faced with the fact that determined action on our part is essential to retain to the white artisan in the Transvaal that employment which he has by his presence created, and is his just inheritance by virtue of the sacrifices made by him in the past. Therefore the Federation of Trade Unions, having a membership of over 15,000 men employed in the various trades, have decided, after trying every other means to stop the evil, to institute a boycott of all employers of cheap coloured and Asiatic labour. The decision has been come to, not in the interests of one class or section of the community alone, but in the interests of all those of the white race who would make South Africa their home. We therefore claim the support and assistance of every white man and woman who has the welfare of the white race and of this country at heart in carrying our scheme to a successful issue. Everyone can help us in our object—the shopkeeper by insisting on 'white' labour in his business, [illegible] compelling the property owner to employ white artisans upon repairs; the prospective tenant, by getting assurances that the house he wishes to hire has been built by whites and will be kept in repair by whites; and the white workman by only giving his support to those who are prepared to help this scheme to maintain the white standards of living in South Africa. We make this appeal with the full knowledge that we are striking a blow at a class who are imbued with the selfish desire to gain a few pounds more profit or rent through the use of coloured labour, instead of members of our own race, and also with the knowledge that our victory in this campaign means a white Transvaal, security to the white artisan, and an inheritance for the future white generation."

The foregoing extracts are dealt with more fully in our leading columns.

NATIVE LABOUR REORGANISATION AND WORKING COSTS REDUCTION.

A Leading Engineer on Labour Economy—Selection of Native Workers Advocated—Important Issues of Health, Time and Money Involved.

"What is wrong with South African mining?" is a query which is receiving the most earnest attention of mining men in all parts of the Union, and on the preceding page we give an interesting symposium of the opinions of some representative men who have favoured us with expressions of their views on the subject. It is patent that much can and should be done to encourage and develop mining in the outlying districts, but after all the Rand, as being by far and away the leading field of industry, calls for foremost consideration. What is wrong with the Rand to-day? It is difficult to venture any very hard and fast explanation in a single sentence, but it is quite clear that interest in the Main Reef series is languishing, and however much one may deplore the existence of so many pessimists in regard to the Witwatersrand it is evident that the pessimists are to-day in the majority. Most practical mining men in response to the query given above express the view that working costs have failed to respond to the conditions which it was confidently assumed would result in lower operating charges, and this is responsible for the feeling of disappointment in regard to the Main Reef series that has got abroad. How, then, may working costs be reduced?

Lesser Natives Advocated.

One important suggestion is contained in the annual report of Mr. C. D. Leslie, consulting engineer to the Consolidated Gold Fields of South Africa. In his last annual report, Mr. Leslie wrote: "Probably the most important means for decreasing expenditure on the mines of the Rand and also for giving security for continuance of the present scale of working would be found by saving native labour, not only by mechanical replacement but also by closer organisation to prevent overmanning at any point. The figures taken from the Chamber of Mines returns for December last show that if the number of natives employed for the total tonnage milled on all your mines be taken as a correct basis for the other mines of the Witwatersrand, these other mines could dispense with 11,526 (=31·27 per cent.) natives engaged on surface employment and 48,829 (= 35·88 per cent.) natives engaged underground, or a total of 60,355 natives (=34·9 per cent.)" This view of the subject of how to decrease expenditure is not exactly a new one, but at the same time it is sufficiently important and sufficiently original in contrast to the time-worn cry of not enough labour to merit investigation, and we have accordingly been at some pains this week to obtain further opinions on this aspect of the matter.

A Consulting Engineer's Views.

A leading Johannesburg consulting engineer, when interviewed on the subject, remarked: "Better organisation of the labour forces of the Witwatersrand will produce more true economy in working charges and will do more to improve the reputation of the Main Reef series as a mining field than any other conceivable thing." "This," he continued, "is the biggest factor in the industrial situation to-day. If you examine figures as to the underground labour complements of different mines and the tonnages mined and milled by the properties in question you will find that as between certain mines there are remarkable discrepancies in the number of tons mined and milled per month per native. On some propositions the tonnage efficiency per head is very much higher than at others, and there are no very apparent reasons in so far as the conditions in the mines themselves are concerned why this should be so. For example, the discrepancy is not explained by differences in stoping widths of reefs or other conditions natural and peculiar to the mines."

Lack of Organisation.

"In reality the reason is to be sought for in organisation of labour force, and if you go into working costs figures as between different properties you will ascertain that economy in the cost of production is proportionate to economy in labour. There are on the Witwatersrand a large number of mines woefully overmanned. The native labour complement is, according to the tonnage milled, fixed at so many hundred or so many thousand boys, and, in order to obtain that complement, or as near that complement as possible, large numbers of boys, totally unfitted for their work, are employed. As long as natives can pass the medical test the majority of mines, it seems, are only too willing to engage them, irrespective of the questions of ability, intelligence, physical strength and robustness. Large numbers of natives employed on the Main Reef series, instead of being an advantage or benefit to the mines, are in reality a sheer unproductive expense. I strongly advocate a system of selection of coloured employees. Such selection would, of course, have to take place on the Witwatersrand and not the recruiting areas, and I am sure that the whole industry woud derive tremendous benefit from a process of weeding out such natives as are unsatisfactory, as very large numbers of the Rand's coloured employees most unquestionably are."

The Crux of the Problem.

"The employment of a huge army of superfluous and totally inefficient natives is the root trouble of high working costs on the Rand to-day. This is, in fact, the crux of the whole industrial situation, and the deeper one goes into the matter the more evident it becomes that labour economy, better labour organisation, and selection of employees can produce results of incalculable benefit to the Rand. There are employed between Randfontein and Geduld at the present time something like 40,000 hammer boys. As hammer boys I believe the great bulk of them could be dispensed with and their energies and intelligence directed into more productive channels of labour. The best hammer boys are invariably those most physically fit and generally those most intellectually fit as well—it is a case of the old adage *mens sana in corpore sano*. Now such boys could be undertaking much more valuable work than thumping a drill, and of course a considerable number could be dispensed with altogether. The Rand must strive to economise in labour in every possible way. In the substitution of mechanical devices for hand labour there is scope for tremendous saving. There is still an enormous field for inventors on the Rand, particularly in the directions of substituting mechanical hammer drills for hand labour, of introducing mechanical methods for lashing ground and cleaning stopes, etc., etc."

Savings in Time, Money and Health.

"The savings that would result from a proper endorsement of this policy would be simply enormous. Consider, for instance—to take only one aspect—the saving in lowering and hoisting, say, 25 per cent. of the "normal" labour force of the Rand. There would be immense direct saving in regard to the time occupied on the trips in the shafts and on the amount of money expended on those trips, and there would be at least equally great indirect savings in the directions of white men not having to wait for their boys to come forward, and in the lowering and hoisting of tools for these superfluous boys. Consider, too, the economy in recruiting charges and in the feeding, etc., of these boys. But this question is not concerned with money-saving alone. Economy in labour would greatly improve the health conditions of the mines. If there were, say, 25 or 30 per cent. less labourers underground there would be 25 or 30 per cent. more air and breathing space per man. That is obvious. Consider the subject of labour economy from any point of view you like, and it must be clear that herein lies the industry's greatest opportunity for improvement." These are weighty opinions, and since the contentions expressed in the foregoing can be supported by actual facts and figures it is to be assumed that the whole subject of labour economy is, or soon will be, receiving the earnest consideration of the entire industry.

AFRICA AND THE WORLD'S GOLD OUTPUT.

Dark Continent Likely to Yield 50 per cent. this Year—Comparative Figures for 1912 and 1913.

Although Southern Rhodesia and West Africa yielded record gold outputs last year, and although the output of miscellaneous areas, such as the Kilo gold fields in the Congo Free State, was probably higher in 1913 than in preceding years, the gold output of the African Continent was less last year than in the preceding twelve months by approximately £1,036,000 sterling. So far as can at this juncture be estimated, the total output of Africa last year was worth forty-two millions sterling, and in the preceding year £43,042,000. Roughly speaking, Africa in 1913 contributed 46 per cent. of the world's output. The decrease of about £1,036,000 in the 1913 output as compared with the 1912 return is wholly attributable to the falling off in the Transvaal production, on account of the Rand labour troubles. Before dealing with the productive areas individually, it will, however, be best to state the figures for Africa as a whole. The 1912 and 1913 productions are as follows:—

	1912.	1913.
Transvaal	£38,757,560	£37,358,040
Southern Rhodesia	2,707,369	2,903,267
West Africa	1,497,179	1,634,700
	£42,962,108	£41,896,007
Other Areas (estimated) ...	80,000	110,000
Total for Africa	£43,042,108	£42,006,007

It should be explained that under the heading of other areas are included the Kilo gold fields of the Belgian Congo, the mining area of Mozambique in Portuguese East Africa, the German East African mines, and a few other remote productive auriferous areas. To revert to the Rand, the strike of July last and the resultant disorganisation of the labour forces, both black and white, must be held responsible for the shortfall. It should, however, be borne in mind that the 1912 production was inflated by the reason of the inclusion of reserve gold which had been accumulated over a number of years and which was included in the March return. Actually then the 1913 decline was £1,100,000. The result is after all not such a bad one as when the total is compared with that of 1911, an increase in the annual rate of production amounting to no less than two and a third millions is to be observed. As already explained, the number of milling days lost by the Rand industry from one cause or another last year was exceptional and under normal conditions the 1913 output would have constituted yet another statistical milestone on the onward march of the Rand. Despite a " bad start "—again the result of labour troubles —the outlook for the present year is bright. In a few months' time the 50,000 tons plant of the Modder Government Areas will commence work, to be followed at a slightly later date by the Modder Deep Levels equipment. The latter property can scarcely be expected to have any influence on this year's output, and indeed the Modder Government Areas is not likely to contribute anything substantial to the return of this year. But in any case there seems every reason to suppose that the gold harvest of the Main Reef series for the current twelve months will be greater than that of 1913. In Rhodesia the prospects of an appreciable early advance in production are better than they are on the Rand, since inclusion of the outputs of the Shamva, Cam and Motor, Falcon, Antelope and Bell mines in the monthly return is expected to improve the output by something like 50 per cent. in the very near future. It is indeed probable that before the end of the year the mines of Southern Rhodesia will be producing at the rate of one million ozs. per annum. We are unable to write with any fitting knowledge of the output prospects of outlying areas for the current year, but it can pretty safely be assumed that the production of the African Continent this year will be substantially greater than that of 1913, and since the gold output of other continents appears to be on the decline one is fully entitled to assume that this year Africa will yield very nearly one-half of the output of the whole world.

POSITION OF THE FERREIRA DEEP.

Slight Effect of Industrial Upheaval.

The quarterly report of the Ferreira Deep for the period ended December 31 states that No. 2 incline was sunk 112 feet during the quarter ended December 31, and it is expected that the sinking of this shaft will be completed early in the new year. Good progress was made in the crosscut on the 12th level, to develop the claims south-east of the Grahamstown dyke, and also in the 12th level, main drive west from No. 1 shaft. The result of the development work continue good, although the values disclosed on both reefs are lower, due to the completion of several faces in the richer western area, and the increased development now being done in the poorer ground to the east of No. 1 shaft. Good values have been exposed in the 13th level leader drive east from No. 1 shaft, and the level above, the 12th level East, has in consequence been re-started. In order to improve the ventilation, a fan is being installed on the 12th level at No.1 shaft. It is expected to have it running during the current month. Progress is also being made with the new scheme for the concentration of the pumping plant at No. 1 shaft. The tonnage crushed was higher by 4,710 tons, but the yield was lower by 3s. 1d. per ton milled. Costs were reduced by 1s. 11d. per ton milled to 17s. 10d., and the profits from current treatment at £152,764 are slightly lower than those of the previous quarter. The mine continues to suffer from a serious shortage of native labour, and at 31st December had 3,032 natives against its complement of 4,585. An amount of £1,440 was expended on capital account; an estimated sum of £5,790 being still required to complete the work at present authorised. A comparison of the tonnage crushed between 1st and 18th of December, 1913, and for the same period January, 1914, shows a decrease of 4,258 tons during the latter month due to the industrial upheaval.

A Mining Case.

OWNERSHIP OF "USSHERINE."

E. G. Jones v. Lancelot Ussher

This was an application affecting the ownership of a patent process for purifying air in mines. Edward George Jones, an engineer, applied for the confirmation of a rule interdicting Lancelot Ussher or a company known as Ussher, Ltd., from disposing of or in any way dealing with an invention for the laying of dust in mines known as "Ussherine."

Mr. Greenberg, who appeared for the applicant, said that the respondent had agreed to the confirmation of the interdict pending the bringing of an action for an account, payment of profits, and an order directing an endorsement to be effected on the letters patent as to the interest or holding of the applicant; or alternatively for £2,500 damages. The applicant claims to be entitled to a one-third interest in the invention. His Lordship confirmed the interdict in terms of the consent, and, at counsel's request, allowed the prayer in the petition to stand as the summons in the action.

THE OUTLOOK FOR TRANSVAAL TIN.

No Curtailment of Output Despite Fall in Price of Metal—The Olifant's River Belt—Question of Local Smelting Revived.

CONTRARY to general expectations, there has been no sustained advance in the price of tin during recent months. At the moment of writing Straits tin, which may be taken as more or less "standard metal," is quoted at £175 15s. per ton. Whether the continued depression in price is the result of professional manipulation or whether the maintenance of the low price is the result of the ordinary mercantile laws of supply and demand, it is difficult for us in South Africa to judge, but the fact remains that tin to-day is nearly £10 per ton lower than it was in October last, and is no less than £52 10s. per ton below the average price obtaining at the beginning of last year. Despite this decline in the price of the metal there is no sign of a falling off in the South African production.

SOUTH AFRICA'S OUTPUT.

The value of the tin ore produced by the various mines of the Union of South Africa was substantially higher in January, 1914, than in February, 1913, when the average price was over £220 per ton. The decline in the price per ton has been counteracted by the production of a larger tonnage aggregate. Thus in February of last year the output in tons was 254, whereas last month 366 tons were sold and shipped. In order to make the fluctuations in tonnage output and value realised clear the following table of sales and shipments is given:—

PROGRESSIVE TOTALS (Since Union).

	Copper.		Tin.	
	Tons.	Value. £	Tons.	Value. £
June-Dec., 1910 ...	9,627.667	228,036	1,774.500	176,743
Year 1911	23,097.776	552,145	3,533.729	411,871
Year 1912 ...	18,570.480	556,978	2,932.208	367,699
1913—				
February	2,442 250	71,184	254.170	32,817
March	1,363.333	36,596	319.308	44,530
April .. .	468.500	12,601	243.278	34,594
May . . .	179.900	4,402	276.840	35,045
June	3,796.000	101,453	380.750	41,872
July	524.416	14,261	303.152	35,473
August .	169.167	4,380	306.390	37,096
September	595.750	16,427	272.190	31,555
October .	4,402.660	133,054	338.058	37,318
November	2,501.160	69,912	378.952	39,425
December	733.320	17,788	388.351	38,614
1914				
January	4,791.080	131,049	366.557	38,613

Virtually all of this has been produced by the mines situated in the Waterberg district of the Transvaal. Thus last month the actual output of tin ore for the whole of the Union was 376 tons, and of this the Transvaal yielded 373 tons, the balance of 3 tons being derived from the Cape. The two largest producers continue to be the Zaaiplaats and Rooiberg mines. The former company has recently been hampered by shortage of native labour, but a week or two ago conditions in this respect improved materially and the proposition is now in a more normal state as regards ability to mine and mill the usual amount of ore. In January, 1914, the Zaaiplaats Company's mill ran for 23 days and milled 2,419 short tons. The residues re-treated amounted to 933 short tons, and the concentrates won, 80 long tons. The average value of concentrates was 67'6 per cent. metallic tin and the estimated profit for the month, excluding the Government tax on profits, was £3,796.

THE OLIFANT'S RIVER FIELD.

As was recently mentioned in these columns the tin properties in the Olifant's River cassiterite belt continue on the whole to open up satisfactorily. The values are in sections erratic, but at the same time there are considerable stretches of quite payable ore, and there can be no doubt that much of the ore already developed should yield a substantial profit. In this respect it is interesting to note that a new syndicate, styled the Platdoorn Tin Syndicate, has just recently been formed in Pietersburg to develop claims on the Olifant's River tin belt. In the Northern Transvaal it is generally anticipated that the coming winter will witness great activity in this area, although the question of water may present difficulties. At the present time a large amount of prospecting work is proceeding, but from all we can gather much of this work is being misdirected and occurrences and indications which would attract the attention of more experienced tin miners are being passed by unheeded. Tin mining all the world over is an operation of proverbially speculative character, and in the Transvaal the nature of the tin deposits, pipes, stockwerks, and occasionally true fissure and gash lodes introduces an element of acute speculative character. But it must be recognised that we are all the time learning, and although the opening up of cassiterite bearing tin bodies can never become a rule of thumb the experience now being acquired cannot but be of inestimable value when applied to new and unproven ventures.

THE SMELTING QUESTION.

From whatever point of view the subject is approached it seems quite clear that tin mining in the Transvaal is going to progress, and it is only natural that the question of smelting ores locally should therefore again come up for consideration. But it is probable that however great the obvious advantages of such a practice may be, the day when the Transvaal will have its own furnaces successfully smelting its own tin ores is still a good way off unless there are material changes and advances in the metallurgy of tin. There are several factors which at this stage are detrimental to the establishment of a local tin smelting industry, but probably the most important consideration is that a combination of ores is necessary for good results. The large tin smelting works of Europe purchase ores of various grades, qualities and compositions from all parts of the world, and by a blending of, say, Bolivian and Cornish ores, or, for example, Straits and Transvaal, or Nigerian and Banka, experienced tin smelters are able to secure a maximum of extraction. In South Africa such an admixture is not possible, and this in the present state of our knowledge regarding the metallurgy of tin is a major, if not the major, objection to the establishment of a local smelter industry.

French Rand.

The annual report and statement of accounts of the French Rand G.M. Co., Ltd., has been circulated to shareholders, and will be presented at the annual meeting on March 31.

The report states, *inter alia*, that it has not been possible to make any arrangements for the resumption of the working of the mine. All buildings and machinery have been maintained in good condition during the year. The capital of the company remains as last reported, viz., £514,000, and no change has taken place in claim property and mine development and equipment accounts. The net cash liability on December 31st, 1913, amounted to £30,519 0s. 1d., an increase of £5,168 4s. 3d. when compared with the previous year, which is made up as follows:—Excess expenditure over revenue, as per profit and loss acount, £7,002 13s. 11d.; less decrease in amount of sundry debtors £336 1s. 10d., stores and materials, etc., £1,134 17s. 4d., furniture £363 10s. 6d.—£1,834 9s. 8d. Sundry creditors account (sundries), £3,257 6s. 7d., is chiefly made up of an amount of £2,785 14s. 4d. in respect of fees credited to directors since December 1st, 1909. The National Bank of South Africa, Ltd., has continued to finance the current requirements of the company. The expenses of the company are being kept as low as possible, the main items of expenditure being for insurance, maintenance, and caretaking of property, £1,159 14s. 11d.; claim licences payable to the Government of the Union of South Africa, £2,976; and interest on overdraft with the National Bank of South Africa, Ltd., £1,500 19s. 5d. An amount of £1,382 0s. 1d. has been written off stores and materials and furniture accounts for loss on realisation and depreciation. Included in the revenue for the year is an item of forfeited dividends, £274 13s., which represents dividends unclaimed by shareholders for a period of five years, and now forfeited by the Board in terms of Clause 123 of the Articles of Association.

WELFARE WORK ON THE MINES OF THE RAND.

Housing Schemes, Gardens, Model Villages, and Men's Committees—What the Small Holdings Commission Found—How Gardens Make for Thrift and Social Reform Lessons from America.

To the "welfare work" initiated by the garden village schemes of the Corner House mines, recent events have lent a marked stimulus and fresh incentive. Under the names of "Industrial Service," "Social Service," and "Welfare Work," various movements are now afoot or under discussion to brighten and improve the lot of the worker on the Rand. We would like to see all those schemes brought into line and co-ordinated with a view to securing smooth, harmonious working. In the last resort, the aim of all is alike—to make the life of the worker safer, pleasanter, healthier and freer from anxiety. Some startling facts were recently collected by the Small Holdings Commission in regard to the general and deep-seated desire among Reef workers to own a garden! Some cynics may scoff at the idea—but there it is, and the report of the Commission quoted below, bears witness to the effect produced by the sincerity and genuineness of the desire. The fact is that in this direction, the Rand lags lamentably behind the industries of other countries—notably those of the United States. There the great importance of, and intimate connection between, questions of safety, sanitation and welfare for the workers has long been recognised, and in this connection the Rand may profitably take a leaf out of their book. To the manager of the local branch of the United States Steel Corporation we are indebted for a valuable collection of literature describing what that mammoth organization has done in this direction. From this we gather that the Bureau of Safety; Relief, Sanitation, and Welfare of the United States Steel Corporation has now been in operation for three years It is in charge of a manager whose entire time is spent on this work. This bureau acts as a central station in obtaining information and disseminating it among the subsidiary companies. It carries on the administrative work of both the Committee of Safety and the Committee on Sanitation. It distributes to the subsidiary companies comparative statements on accident prevention, compiled from reports sent in by them periodically, so that they may benefit by each others' experience. The bureau is constantly in communication with municipal, State, and national authorities, with other employers of labour and with various persons engaged or interested in this work. From many sources it obtains information of value on these subjects, and keeps the subsidiary companies informed of the latest and best methods in accident prevention and welfare work. In this way the bureau aids materially in co-ordinating the efforts made by the subsidiary companies to improve the conditions of their employees. It was realized from the start that co-operation between those carrying on this work is one of the most essential features. With this in mind, there has been established in the bureau a museum of safety appliances, together with photographs showing the improved conditions under which employees of the subsidiary companies work and live. Although this bureau was installed primarily for the benefit of the subsidiary companies of the United States Steel Corporation, many other employers of labour have written for information or have visited the bureau.

GARDENS FOR WORKERS IN U.S.A.

What the garden movement means in the States may be seen from the following extract from the *Monthly Bulletin of the American Iron and Steel Institute*:—

> During the summer months a visitor to the Connellsville and Lower Connellsville coke regions in Westmoreland and Fayette Counties, Pennsylvania, will find in all the towns of the H. C. Frick Coke Company (a subsidiary of the United States Steel Corporation) beautiful flower gardens and lawns, and thriving vegetable gardens, the result of successful co-operation of employer and employees. The company does ploughing and filling where it may be required, and the soiling and fertilising of gardens where good soil does not exist. And, when necessary, the company instructs employees in developing and growing profitable gardens and pretty grass plots and flowers [illegible] During the year 1912 the employees of the H. C. Frick Coke Company and their families cultivated 5,149 vegetable gardens representing 72 per cent. of the total number that could have been planted [illegible] the company. [illegible] feature, and to encourage thrift and industry, the company gives cash prizes to its employees for the best [illegible] and lawns. The prize winners are determined by [illegible] of [illegible] members of civic organisations of the surrounding country. Each successful contestant is presented with a steel-engraved certificate bearing his name and the location of his house, signed by the several members of the committee awarding the prize. The H. C. Frick Coke Company [illegible] natural that the company [illegible]

GARDENS OF SOME OTHER U.S. STEEL SUBSIDIARIES

> The American Bridge Company, having an unoccupied field near its plant at [illegible] its employees [illegible] families, representing many races, American, [illegible] Bohemian, Hungarian, Russian, Greek [illegible] gardens, [illegible] farmers or gardeners in their [illegible] 60 acre tract [illegible] allotments. The company is endeavouring to secure for this purpose some vacant property near by not owned by the company.

MARYLAND STEEL COMPANY GARDENS

> Twenty years ago the Maryland Steel Company adopted the plan of giving each spring a quantity of bedding plants to [illegible] applied for them. In 1905 this policy was supplemented by offering prizes for the most attractive display of flowers and for the best kept yards. These prizes were as follows: One first prize of 10.00 dollars, eight second prizes of 7.50 dollars each, and twenty-six third prizes of [illegible] dollars [illegible] annually. The number of competitors increases each year, and the influence of the beautiful gardens and lawns extends to other premises whose occupants feel the inspiration of fine example.

THE GIVING OF PRIZES

> The first incentive for the making of these gardens is furnished by the prizes offered by the several companies. Later on, while the money prizes are still appreciated, there comes to the garden makers an appreciation of the joy of doing and the inherent reward of accomplishment.

GARDENS FOR RAND WORKERS

The following, from the report of Small Holdings Commission, is eloquent of the "garden-hunger" on the Rand:—

> The possession of a house and garden which he can regard as his home is no doubt in a sense "a drag" on a man, but we think it is a drag of a very healthy kind. It will be a drag on him in the sense that it will increase his prudence; but at the same time it will help to give him a real, instead of a merely imaginary, independence. The man with a home of his own will not throw up his job for any trivial reason, when he may have to leave his home before he can find another. He will, therefore, not enter on a dispute lightly, but when he has a serious cause of complaint against his employer he will be in a better position for asserting his claims. Quitting his job will not, as in the case of mine employees to-day living in mine houses, involve the quitting of his house as a necessary and immediate consequence. Once his instalments are paid and the place is his own, his monthly expenses will be reduced by the fact that he has no rent to pay. Further, his holding will give him useful occupation before he finds other work, and, if it be not actually a source of revenue, will at least in part provide his family with the necessaries of life. There is also this point to be considered. The controllers of the mining

industry are not blind to the importance of securing more settled conditions, and obtaining a permanent instead of a constantly shifting body of employees. This is shown by such schemes as those on which the City Deep, the Apex and the New Kleinfontein Mines are embarking, and by the declarations of prominent mining men. If this is the case, we think there is every reason to anticipate that mining employers will, as a rule, be anxious to retain in their service men who have got small holdings in the neighbourhood of the mine on which they are working, and will see that the conditions of employment are such as will induce these men to remain on the mine, and that their services are not dispensed with for trivial reasons. We may quote the following further extract from Dr. Macaulay's evidence as showing that in his opinion a successful small holdings scheme should tend to operate in this twofold way, to check the shifting of mine employees :—"Firstly, if the employee had a home of his own, which he could call his own, and not a hired house, within reasonable distance of his employment, he would be very much more careful than he is at present to avoid causes likely to lead to his dismissal; and secondly, I think I have enough faith in the management of the mines, knowing them pretty intimately as I do, to feel assured of this, that, if a man were known to have his own house within the vicinity of his work, a little more consideration would be given him before giving him 24 hours' notice which most of the contracts now require. I think it would operate in both these different ways. The man would be more careful to avoid running risks likely to give him what is called 'the sack,' and the mine manager would be also more considerate in dismissing him for trivial reasons, which undoubtedly happens at the present moment." At the same time we recognise that the difficulties arising from unavoidable migration have to be taken into account. For this reason we think that the best situation for a group of garden holdings, intended for the benefit of mine employees, will be one which is accessible from several different mines, so that the holder who, for one reason or another, has to leave his employment may have an opportunity of obtaining other work within reasonable access of his holding. Further we propose that the terms on which small holdings are granted shall be such as to enable a man who has to leave his holding to transfer or surrender it, and to obtain reasonable compensation for expenditure incurred in improvements.

SAVING AND THRIFT.

The relation between the wages earned on the Rand and the cost of living has been dealt with in Section 16. We there stated it as our opinion that, after a liberal allowance has been made for an improved standard of living, the rates of wages in skilled trades on the Rand are such as to leave in normal circumstances to the reasonably careful man, who is in continuous employment, a balance available for saving which is by no means insignificant. But such evidence as we have received on the subject indicates that the proportion of mine employees who make a practice of saving, and have thereby succeeded in accumulating small sums of capital, is at present small. For instance, Mr. John Wright, a shift boss on the Comet Section of the East Rand Proprietary Mines, who stated that a number of underground men had been continuously employed on that mine for six years or longer gave the following evidence on this point :—"Q.—Among those men who have been in steady employment for some years, do you think there are many who would be able to get a small holding allotted to them A.—Very few of them. Q.—They have no savings? A.—No." This evidence accords with the general impression as to the unthrifty habits of the majority of mine employees. Probably owing to the less settled conditions of their lives, the mine employees compare unfavourably in this respect with other industrial employees on the Rand. But, taking the industrial community as a whole, it is probably safe to say that its standard of thrift is a low one, and that the proportion of earnings which is spent in amusement and recreation is abnormally high. We believe that small holdings may prove important factors in the promotion of saving and thrift. Their effect will be twofold. The man who has a small holding, and is keen on making it a success, will be at work on it during the leisure hours which might otherwise be passed in bars and places of amusement; he will thus find that other calls on his purse are diminished, and at the same time his desire to save will be increased, because there will be a number of new purposes in connection with the stocking and improvement of his holding to which he will want to devote his savings. Mr. F. T. Nicholson, Secretary of the Transvaal Agricultural Union, laid stress on this point :—"The whole movement, to my mind, is on a moral as well as a social basis. One of the principal reasons why it has been carried out in England and other countries is that the man is in his garden, and is not in the public-house." The same point was put in a graphic way by another witness, Mr. G. R. Patmore, a blacksmith, who has now become a successful poultry farmer :—"This man (*i.e.*, the man with a small holding) would perhaps go straight home from his work, whereas at the present time he would go and have a game of billiards or go into a bar. If he has anything at home that interests him, and he sees he is doing all right, he will make straight for home. Many a time I have refused a drink at a bar because I had a batch of chickens coming out. I am speaking straight."

Here, plainly, is a fine fallow field for the practical application of the ideals of welfare work, now fortunately becoming popular and familiar on the Rand.

Higher Technical Education.

Professor JOHN YATES, A.R.S.M., F.G.S., etc.

Educated as a mechanical and mining engineer, he achieved some of the highest scholastic distinctions in his profession in Great Britain. He came to the Rand eighteen years ago as expert engineer and metallurgist for the patentees of the cyanide process, a process to which the Rand very largely owes its pre-eminence as a gold producer. As consulting engineer and mine manager he has had experience in various parts of the world, and his tenure as Professor of Mining at our School of Mines was notable for the extraordinary expansion of the number of his students, the number rising from about 10 to 400 in four years. His present classes for mine officials are meeting with remarkable success.

Village Deep.

The report of the directors of the Village Deep, Ltd., for the three months ended December 31st, 1913, shows that the total working expenditure was £131,947, the cost per ton milled £1 0s. 6d., and the value per ton £1 9s. 4d. The credit balance of the appropriation account is £292,692. As to development work, the number of feet driven, sunk and risen, exclusive of stopes, is 4,471. The ore received from the mine amounted to 145,798 tons. The tonnage crushed was 128,600 tons. The total yield was 44,965 fine ounces. The report contains the following general remarks :—The main incline shaft (Turf section) has been sunk 123 feet, and is now 189 feet below the 21st level; the footage of development is 23 feet less than the previous quarter, but the position of the ore reserves remains satisfactory. The payable ore estimated as developed and valued for the half-year ended 31st December, 1913, amounted to 755,661 tons of 27s. 10d. value, and the quantity of ore developed but not fully valued has therefore been considerably reduced. During 1914 working costs will show some increase, as the running charges at No. 3 shaft (Turf Mines) will be charged direct to working costs. The amount of £8,982 was spent on capital account, leaving a sum of £23,387 remaining to be expended on account of work authorised.

WANTED.

POSITION IN REDUCTION WORKS on Small Property in Outside District by Hard Working Man, with good credentials. Can take entire charge and design and erect small plant. Amalgamating, Cyaniding, Smelting, etc. Experienced in erecting and running Suction Gas Plants. Moderate salary required.—Reply, "CAPABLE," c/o *S.A. Mining Journal*, Box 963, Johannesburg.

PETROLEUM PROSPECTS IN THE UNION.—II.

Geological Conditions in the Union—Oily Indications in the Karroo Rocks—Brief Review of Mr. Cunningham Craig's Conclusions.

[By J. E. Mills Davies

Whatever theory may be held as to the origin of petroleum, the points that are to be considered in any investigation that may be made as to the oil-bearing prospects of an area are three in number, and they are concisely enumerated by Mr. Cunningham Craig as follows:—(1) The presence of sufficient carbonaceous material from which oil can be formed; (2) the conditions of deposition; and (3) the geological structure. He remarks that where these three conditions are favourable, an oil-field can be predicted with certainty. It is interesting to note that exploratory work which has been planned out in conformity with this teaching is now being carried out under Mr. Cunningham Craig's direction in the Province of Alberta, in Canada, and it is anticipated that some, at least, of the wells which have been located where conditions were theoretically favourable, will prove the existence of profitable oil horizons. As far as the Union is concerned, it is explained in the report just laid before Parliament, that it is among the strata of the Karroo system only that we may expect to find the given conditions existing simultaneously and in sufficient degree to deserve attention. Even here, however, it is added, they are not of so markedly favourable a kind as to justify the smallest amount of enthusiasm.

Materials, Rock, Texture, and Structure.

"In the Stormberg series in Cape Colony, Natal and Basutoland," says Mr. Cunningham Craig, "the first condition is fulfilled. In the Transvaal and Natal the lower horizons (Beaufort series) also furnish sufficient raw material, and even in the Dwyka shales a certain quantity of the necessary carbonaceous matter, of what origin it is unnecessary to inquire, has been proved to exist in many localities. The conditions of deposition necessary are a thick series of strata formed of alternations of porous and impervious groups of rock formation. The absence of igneous intrusions is also to be desired. These conditions are not fulfilled as well as could be wished in any part of the Union, owing to earth movements having been too slow and regular during the deposition of the Karroo system, and the fact that igneous intrusions of post-Karroo age are very widespread. Favourable geological structure is only found in Cape Colony, and there only in a narrow strip at the southern edge of the Karroo. There is, however, a possibility that north-eastern Natal, in areas I was unable to visit, might furnish favourable structures. The folded belt of the Karroo system contains excellent anticlinal and dome structures, beyond the southern margin of the area characterised by igneous intrusions, and so far as I have been able to ascertain no prospecting for petroleum has been done in that region. The prospects, it must be admitted, are not very hopeful. Only the lower part of the system is involved in the folded belt, and as the carbonaceous contents of the strata seem to decrease perceptibly to south-westward, the quantity of raw material cannot be large. Yet even in its southern outcrop the white band of the Dwyka contains a fair percentage of carbonaceous matter, sufficient in some localities to have admitted of its igniting spontaneously and burning. Impervious beds to act as a cover for any oil that may be beneath the surface are present in quantity in the Ecca shales, but the presence of a sufficiently porous reservoir rock is problematical. Thus at the best, the conditions are not favourable for large productions."

Briefly, there is not much wanting as far as the necessary materials are concerned, but the porous sandstones which are of such importance from the point of view of large productions, and the anticlines and domes which are generally regarded as essential for the same reason, do not exist together to any considerable degree. The folded belt of the Karroo which is referred to by Mr. Cunningham Craig as being a geological area which might be [illegible] most closely runs for a great many miles, in an easterly and westerly direction, along the southern edge of the Karroo. It marks the northern limit of an extensive succession of more or less parallel folds which are continued through the underlying formations as far as the coast line, and give rise to the magnificent mountain ranges which are so distinguishing a feature of the Cape littoral. The line of railway from Kimberley to Capetown enters the belt not far from Prince Albert Road station, and runs roughly parallel with it for some distance. The traveller is thus enabled to see some extremely interesting examples of folding in a group of rocks which, for several hundred miles to the north, are found lying almost horizontally. The dolerite sills and dykes have ceased to be observed for some way back, for the southern limit of post-Karroo dolerite intrusions courses east and west through the country adjacent to the town of Beaufort West. The "fly in the ointment" as far as this folded Karroo belt is concerned, according to Mr. Cunningham Craig, is that the carbonaceous material is comparatively scanty, and the porous sandstones of the more northerly regions and higher horizons are not in evidence. At any rate a more detailed examination is recommended.

The Matter of Indications.

With regard to the numerous oily indications which are so prominent a feature of the Karroo rocks, from Calvinia to Basutoland, the report draws attention to the igneous intrusions in these strata, and attributes the phenomena mentioned to their agency. "It is the action of these intrusions upon carbonaceous strata, coals, or oil-shales, that is of special interest. The heat of an intrusive mass has very frequently caused a local distillation of hydrocarbons. The molten rock occludes these in the form of gas, and occasionally absorbs quite a considerable quantity of material originally organic. As the igneous rock cools, the gas condenses into oils, which may finally become impissated, and are found in vesicles and veins or along joint planes—in fact, in any porous or cavernous part of the rock. The surrounding strata also, if porous, may absorb a little oil from the igneous mass. A dyke passing through carbonaceous horizons may absorb hydrocarbons in this manner, and carry them upwards for thousands of feet, finally consolidating among strata where no traces of bituminous or carbonaceous material is to be discovered. . . . It is this natural distillation and its effects that have been the cause of most of the prospecting work for petroleum that has been done in South Africa. . . ." Upon more than one occasion during several years past I have pointed out, in the columns of the *S.A. Mining Journal*, that this distilling action of the dolerite intrusions of the Karroo should be taken into consideration when examining so-called petroleum indications. A few years ago, when company flotation was active in the Ladybrand district, the *S.A. Mining Journal* drew special attention to this circumstance. Comparatively recently some very obvious dolerite, with cavities containing oil, from a Free State district, has been exhibited with the statement that the analysts consider it an unusually fine sample of oil shale. Mr. Cunningham Craig's statements regarding the phenomena under discussion will probably suffice to drive home the views which have apparently been expressed in vain in the *S.A. Mining Journal*. Another kind of indication which has been dealt with several times in the *Journal* is that of the so-called coal at an abandoned mine in the Beaufort West district of the Cape Colony. Mr. Cunningham Craig, in his report, refers to an occurrence, which, if not the same as the one I am thinking of, is quite similar to it geologically. This is his description of it:—"At Leeuw

River Poort bright bituminous coal in vertical seams is recorded. I did not visit this locality, but from the evidence and the fact that the coal contains only ·8 per cent. of ash, there can be little doubt that these vertical seams of so-called coal are manjak or grahamite veins, which have been introduced in a liquid or semi-liquid state. Such occurrences frequently occur above oil-bearing rocks, *e.g.*, in Trinidad and Barbados, but in this case the action of igneous intrusions has probably been the determining cause of the distillation of bituminous material. The area is close to the margin of the province characterised by the presence of post-Karroo dolerite intrusions."

As far back as 1898 I made a special visit to the geological department of the South African Museum at Capetown in order to obtain the views of the geological survey upon this particular material. The geologist I met there observed that it was coal, without a doubt. Several years later I drew the attention of Dr. Sandberg to this occurrence, but have never heard whether he had an opportunity of inspecting it. During a journey of a few days which I made with Mr. Cunningham Craig last year I had occasion to refer to the matter again, and understood him to say that he had no information whatever about it. Evidently he took the trouble to make enquiries, and his conclusions, as quoted above, are of special interest.

Oil Shale Possibilities.

It is unnecessary to say much with regard to the oil shale problem of the Union, except to emphasise the fact that prospects which Mr. Cunningham Craig regards as distinctly favourable have been persistently condemned here for a long while past by persons whose methods suggests that they have been by no means disinterested in the matter. The opposition to the exploitation of these oil shales has not been confined to Johannesburg; it has extended as far as London, where special newspaper issues and pamphlets have been partly devoted to the subject. The *S.A. Mining Journal*, alone, has pleaded for a reasonable and open-minded attitude towards what has always appeared to it to be an asset of possibly enormous value. The difficulties in the way of a proper investigation of the oil shale deposits of the Union are those which were inherent to gold mining not many years ago. Owners ask absurd prices for mineral rights and option-holders add to the burden by demanding large sums in cash for temporary options over short periods, and further amounts in cash and shares upon flotation. These obstacles have been largely done away with in the case of gold properties owing to the determined stand made against them by the mining houses. It cannot be too distinctly understood by all concerned that the extent and thickness of the oil shale seams in the Union are, practically speaking, absolutely unproved, and that in view of this condition of things the most astonishing of analytical results are of very little importance. The oil shale area, moreover, is apparently of great extent, and as long as the supply of ground seems abundant purchasers are not going to pay "fancy" prices, either for options or mineral rights. The buyer of to-day prefers to put his money into the ground in the shape of exploratory work, rather than pay it in options, a proceeding which is equally to the interest of the owner. As a result of Mr. Cunningham Craig's views large blocks of ground have already been taken up in the South-Eastern Transvaal, and others are being negotiated for by various persons. In Natal a considerable extent of oil shale ground has been pegged, and is probably at this moment under the consideration of the Admiralty, the holder of the area in question having gone to England for the purpose on the "Umgeni." To be quite clear, I may add that he was not deported.

Mr. Cunningham Craig's Conclusions.

Looked at from every point of view it is difficult to see how the evidence at Mr. Cunningham Craig's disposal could have led him to form any other or more definite conclusions than those he has enumerated in his report. His theory, taken as a whole, may not be of universal application, but it seems to apply very adequately to the conditions found in the great expanse of Karroo rocks in which unmistakable oily indications have been found. Broadly speaking, and as I understand the report, it only deals with its subject in a broad sort of way, the prospects of finding petroleum in the Union "are not very hopeful." In other words they are not sufficiently hopeful to warrant the expenditure of large sums of money in further investigations. A partial exception is made in the case of the folded belt of Karroo rocks along the southern edge of the system, where further investigations are recommended. While the outlook, generally speaking, is not hopeful, it may be said, I think, that it is not hopeless. Materials, rock texture, and structure are unfortunately not found together over large areas in the Union, and there is moreover the disadvantageous influence of the post-Karroo dolerite intrusions. It does not follow, however, that in certain localities sufficiently favourable conditions may exist in depth, particularly in the more northern portions of the Karroo. Dykes are not always a serious obstacle to the prolific occurrence of oil, nor are pronounced anticlines and domes an essential structural requirement. Both these statements are abundantly proved by the experience of oil drillers in other parts of the world. The trouble is that it is almost impossible to say, from surface examination, where exceptional areas are likely to exist in depth, and any attempt to find them must necessarily fall within the category of "wild-cat" undertakings. Some day, by an accident, favourable conditions may be found to co-exist even in the unpromising portions of the Karroo, but until then Mr. Cunningham Craig's conclusions must be accepted as our only reliable guide. It is some years since the *S.A. Mining Journal* began to suggest the usefulness of a Government enquiry into the reported evidences of petroleum in various parts of the Union. The outcome of the recent investigations has abundantly justified the value of such an undertaking. There still remain to be considered the prospects of oil finding in this country on the assumption that Mr. Cunningham Craig's vegetable origin theory does not suffice to account for every variety of occurrence of petroleum. An extensive area of folded country lies south of the Karroo, and here the theory would certainly not apply. Other well maintained and widely held theories certainly would do so, and the geological conditions seemed to me, many years ago, favourable enough to justify some practical investigation on experimental lines which, while sufficient to elucidate some important points, would have been comparatively inexpensive, and at the same time fairly conclusive. In view of Mr. Cunningham Craig's valuable contribution to our knowledge of the geology of oil-finding I have little hesitation in saying that these earlier opinions might usefully be reconsidered. At the same time it may be remarked that there are many occurrences of oil in various parts of the world which do not appear to be susceptible of easy explanation on the lines of the Cunningham Craig hypothesis. It may with equal truth be said, however, that they are not adequately explained by any of the others, and herein lies a fruitful field for further enquiry.

Manicaland Output.

The mineral output of the Territory of the Companhia de Moçambique (Manicaland) for the month of January, 1914, is as follows:—Reef: Mill: Gold won (fine gold), 574 ozs. 18 dwts. 10 grs.; tons crushed, 2,040; value £2,414 12s. 6d. Concentrates (estimated): Gold (fine gold), 25 ozs. 8 dwts. 0 grs.; tons, 12·5; value, £107 19s. 0d.; silver and lead value, £60 8s. 10d. Cyanide: Gold recovered (find gold), 8 ozs. 9 dwts. 0 grs.; tons treated, 45; value, £35 9s. 2d.

Mining Examinations.

Private Individual Tuition for Mine Managers, Mine Captains, Mine Surveyors, Mechanical and Electrical Engineers, and Engine Drivers' Examinations. Practical Mathematics and Electrotechnics. Correspondence Lessons where personal tuition is impossible.—E. J. MOYNIHAN, Consulting Engineer, 35 and 36 Cuthbert's Buildings, Box 2061.

THE FACTS ABOUT NATIONAL DIAMONDS.

A Brief History of the Concern—The Various Alterations of Capital—The Present Position.

The recent issue of some 30,000 additional shares in the National Diamond Syndicate has served to arouse a certain degree of feeling in the breasts of those shareholders who consider that the market is sufficiently overburdened with shares as it is, and that the additional issue is not likely to induce an improvement in prices. The following notes have been put together in order to make the position of the syndicate a little more clear to those who are not well informed upon the subject. They have been furnished to us from sources which we believe are reliable.

At March 31st, 1912, the authorised capital was £20,000 in 20,000 £1 shares. Of this amount 15,000 shares were issued.

On April 2nd, 1912, the capital was reduced to £7,500, and then increased to £27,500, but owing to legal informality the Court would not confirm. The company was obliged to go through the procedure again, and on July 15th, 1912, the shareholders authorized a reduction of capital to £7,500 and an increase to £30,000 in 10s. shares, an increase on the previous proposal of £2,500. This was confirmed by the Court on 12th September, 1912. This amount of £30,000 was allocated as follows:—

To shareholders of the Syndicate	£7,500*
To J. F. Back, in return for his reconstructing and financing the Syndicate, and procuring a new option contract for 2½ years	10,500*
For working capital	3,500
To Reserve	8,500*
	£30,000

A total of 60,000 shares of 10s. each.

* In shares.

Back carried out his agreement by obtaining a new option contract and reconstructing and providing cash to the amout of £3,500. The shares, therefore, were distributed thus:—

			10s. shares.
A.	Shareholders	£7,500	15,000
	Back	10,500	21,000
	Working capital	3,500	7,000*
	Reserve	8,500	17,000
			60,000

* Issued for cash: see *Leader*, August 3rd, 1912, at which date less than £100 were said to be left.)

On 7th March, 1913, the capital was increased by £40,000 to £70,000, and the number of 10s. shares, therefore, were increased by 80,000 to 140,000.

At March 31st, 1913, the shares were thus distributed, according to balance sheet of 31st March, 1913:—

		Shares.
Issued as fully paid to vendors ...	£5,000	10,000
Issued for cash	1,250	5,000
Issued for cash	1,250	
Issued as fully paid for consideration other than cash	45,500	91,000
Issued for cash	13,000	26,000
	£66,000	132,000
Balance unissued, reserve	4,000	8,000
	£70,000	140,000

Of the £40,000 increase of capital as at 7th March, 1913, the distribution was as follows:—

			Shares.
B.	Guaranteed	£10,000	20,000
	To acquire valuable assets	26,000	52,000
	Reserve	4,000	8,000
		£40,000	80,000

The two statements, A. and B., may be combined thus:

			Shares.
A.	Shareholders	£7,500	15,000*
	Back	10,500	21,000
	Working capital	3,500	7,000
	Reserve . .	8,500	17,000
B.	Guaranteed	10,000	20,000
	To acquire valuable assets	26,000	52,000
	Reserve	4,000	8,000
		£70,000	140,000

According to Balance Sheet, 31st March, 1913, all issued.

Comparing this table with the balance sheet as at 31st March, 1913, we find that the £45,500 or 91,000 shares of the latter are made up as follows:

		Shares.
Back	£10,500	21,000
For valuable assets	26,000	52,000
Reserve	8,500	17,000
Unexplained	500	1,000
	£45,500	91,000

According to A. and B. there should be, as working capital guaranteed, £10,000 plus £3,500, or £13,500, whereas we find in the balance sheet only £13,000, or 26,000 shares less, apart from the amounts subscribed previous to Back's reorganisation. This accounts apparently for the £500, or 1,000 shares, unexplained above. This amount, that is to say, although guaranteed, was not provided, and on the other hand the guarantor's bonuses were increased by the same amount. Of the £8,500 reserve shares (17,000), £6,000 in shares were allotted as part payment for the Kaalfontein portion of Schuller No. 2 mine. The balance of £2,500, or 5,000 shares, is not clearly explained.

On September 15th, 1913, the Court granted permission to increase the capital from £70,000 to £140,000 by the issue of 140,000 shares of 10s. each. This had been authorized by shareholders some months previously for the specific purpose of granting an option to Lewis & Marks as follows:—On 60,000 shares at par, on 60,000 shares at 12s. 6d., on 20,000 shares, to be offered first to shareholders, and balance not taken up at par to Lewis & Marks; total, 140,000 shares (£70,000). The option holders relinquished their option on August 30th, 1913. Afterwards the directors sold 5,000 of these shares at par and issued 121,000 shares for some purpose which has not been explained to shareholders.

Swaziland Tin.

The following are the particulars in regard to operations for the month of January, 1914:—Concentrates recovered, 35·613 long tons; estimated profit (taking the price of tin at £180 per ton), £1,421; deduct adjustments in respect of previous shipments due to fluctuations in the price of tin, £287; net profit, £1,134.

In the Assembly last week, Mr. H. W. Sampson asked the Minister of Mines and Industries if the fee annually paid to Mr. Ewald Esselen, K.C., as a retainer by the Premier Diamond Company, is contributed by the Union of South Africa to the extent of six-tenths, and, if so, what this six-tenths amounts to. The reply was to the effect that the fee paid as a retainer by the Premier Diamond Mining Company is included in the company's accounts as ordinary expenditure, and consequently the Union contributes towards the fee to the extent of six-tenths.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Life of the Rand.

To the Editor, *South African Mining Journal.*

Sir,—I have read *South Africa's* "Life of the Rand" and your "Life of the Rand," in your last issue, but I cannot understand the following: "We are hopeful as to the future, but confess to a feeling of confidence that there will be troubles of a serious nature to retard the industry's progress if the consummation of that onward march is to be a yearly tonnage of between 65 and 70 million tons," as *South Africa* prophesies. I may read it wrongly, but what worries me is what "troubles" do you anticipate? As *South Africa* very rightly remarks, "the growth of the Rand"—north, south, east and west (say I)—"is only a matter of provision of capital." But the Rand is not the only pebble on the Union's beach! If the Rand were wiped out to-morrow there are many other districts in South Africa to take its place, now that the grade of the pay rock has been reduced to less than 6 dwts. in mines which have to pull and haul, and sink to the De'il knows where to get at it. What about Klerksdorp, Heidelberg, Free State, Lydenburg, Barberton, Swaziland, Low Country, Natal and Zululand? I have lately re-visited the last-named district, and can promise you that 5 to 6 dwt. rock is there to be mined and milled at a cost of 2½ dwts., by water power, from adits, and no sinking required for the next 50 years. I pay no attention to what Dr. This or Dr. That may say concerning the economic geology or otherwise of this country, as there is not one of them, in my opinion, who knows one series of reefs from another, or one geological age from another, because the same are not distinguishable by fossils as in Europe, etc. To wit, Randfontein series is not Main Reef series, nor the dolomites of the Lydenburg age Black Reef dolomites—as they all say! No book ever written will help one to study this country, because it is unique in its formation, having three five-mile thick auriferous geological ages ahead of the rest of the world—and on this point I defy contradiction. There is hardly enough spare money in the world to practically prospect the mineral resources of South Africa from the Cape to the Zambesi (apart from development); and as to its life as a gold producer there is not a man living who knows enough of the country to venture an opinion.—I am, etc.,

SCOTT ALEXANDER,
"Rand Stratigraphist."

Johannesburg,
February 24th, 1914.

[A mining man of Mr. Alexander's experience can hardly pretend to be ignorant of the fact that before the roseate forecast of our London contemporary can be fulfilled serious "troubles" will have to be overcome in regard to the three essentials of production, viz., labour, capital and available resources of the field.—Ed., *S.A.M.J.*]

Prospecting in the Kalahari Desert and Contingent Districts.

To the Editor, *South African Mining Journal.*

Sir,—It will be noticed on reference to the map of South Africa that the whole of the area bounded by the Orange River from Prieska to Tecomes on the one side and by the territory known as German S.W. Africa on the western side, and by Masawara Land on the northern side, remains as barren of newly-christened localities as it was twenty years ago. Geographically and geologically, little or nothing is known of it, but apparently it is to remain for some future generation to exploit. It must not, however, be taken for granted that no attempt has been made, for since 1902 many men have left for the desert, some to return defeated and some never to return, for the Kalahari has exacted its toll in human flesh and blood, and, were the truth known, it has not been a light one. The failures have in many cases been due to bad organisation, but in the large majority of cases, I regret to say, they were due to the physical and moral unfitness of the men who undertook the task. The man who undertakes the task must be capable of withstanding equally as great hardships as the man who undertakes to reach either Pole. Days and nights without sleep or rest will have to be spent in the saddle, and occasionally, beyond a lick at a damp sponge, the limit of endurance without water will be reached. It is a matter of difficulty to describe even the fringe of the desert, as it varies vastly on different sides, but that there are good indications of gold, diamonds, copper and coal is known, but there are, naturally, other attendant possibilities. There are thousands of thousands of square miles, of what would be, to the casual observer, nothing but sand, broken here and there by small black ridges, and in other places what may be termed pans or sun-baked clay basins, often extending for miles across. This is probably one of the richest parts of Africa, both as regards metals, minerals and precious stones; in fact, from what can be surmised from the geological formation as exhibited by the fringe, this is so. It will be asked, and quite naturally, whether this country will ever be prospected, but it can be and will be both prospected and exploited as surely as Captain Scott reached the Pole. The organisation of the party and its equipment must be perfect, and, moreover, the men must be as nearly perfect physically as possible, as well as the cattle used on transport service. The original outfit of the party will require just as special selection as the outfit of an Arctic expedition, and will have to be just as complete in its every detail. As on an Arctic expedition food depots have to be established. This means that water depots require establishment, and it can be done. Whilst the outlay would appear to be considerable, I am more than confident that the results would amply repay and justify it. The party will, for the most part, require to be in the hands of a European who knows what little is known of the country, and he must be self-reliant, as such natives as inhabit the fringe are unreliable and, since the operations against the Chief Marengo by the Colonial troops, are inclined to be treacherous, as on at least one occasion, when acting as guides to a prospector named Davis, they deserted him, and it was with great difficulty he regained civilisation. Such labour as would be required for even the slightest development work beyond the ordinary hands of the party would most probably have to be drawn from the Damara tribes, and even they are, at best, very ignorant and indolent; at least that has been the experience along the River Diggings, to which district there has of late been a large influx of Damaras. In addition to the hundred and one other difficulties, there are also sickness seasons to be considered, i.e., malarial and horse sickness. At one point along the course of whatever route is taken it will be necessary to dispense with all cattle and use camel transport, but that can also be arranged. It is noteworthy in this connection that both the Colonial and German Governments have proved the utility of the camel to be indispensable in the deserts of the South. The question of water, which is paramount, is not, I think, so difficult as would be imagined, but from personal observation I think water will be found at many points at from 800ft. to 1,000ft. from the surface; this would be on the western side of the desert, taking a line N.E. 15 deg. or 20 deg. from the Anghoribec Falls on the Orange River, at which place there are signs of a huge longitudinal fault, whilst on the eastern side of the line the water would more probably be somewhat deeper. The time to be taken up by any expedition would be at least two years; that is to give the attention which it most assuredly deserves, but of course so much would depend upon the intermediate results. Another question of comparative difficulty would be communication with the outside world, but that would also require a special arrangement. At a fair computation I think the approximate cost of a decently-equipped expedition could be written down at somewhere about £6,000 for two years' work, but a great deal would depend upon the personnel of the party, one member of which, at least, would require to have a good knowledge of metallurgical chemistry. Any expedition leaving for the desert would have to tackle the rough collar or trekking work during the early autumn, say, about the end of March, otherwise it would find itself crossing the approaches during the worst seasons of the year. Should the rainy season on the borders be a good one, it would be fortunate, for then the Tsama plant, which is a natural water supply would be found in luxuriant growth, and might prove to be a considerable aid. In conclusion, I regret to state that confidence has been greatly shaken in back-country prospectors, owing to the large amount of work (development) which has been done in the bar parlours of the Hinterland hotels, and I know of more than one report sent and furnished to houses of good reputation which were nothing more nor less than well-garnished accounts of what had been told to the parties concerned over the foaming tankard. Should any bona fide person interested in this subject require more full details, I shall be pleased to furnish same, and, if necessary, to demonstrate practically what enormous distances, over waterless tracts, can be covered by the aid of science and capital.—I am, etc.,

R. A. THOMAS,
Prospector.

P.O. Box 169, Boksburg.

Rhodesian Section.

LATEST MINING NEWS.

The January Output—Katanga Mining Regulations—Charter Trust—A Strike at the Jumbo—Globe and Phoenix Developments—Transport on the Kafue.

THE gold output for the month of January has been declared at 59,212 ozs. of the value of £249,032, being a decrease of 1,342 ozs., of the value of £5,655, on the preceding month. Other minerals: Silver, 10,658 ozs., of the value of £1,069; coal, 29,014 tons; chrome ore, 9,534 tons; diamonds, 66 carats; asbestos, 59 tons; lead, 20 tons.

* * * *

Additional information is available in connection with the report to be considered shortly by the Colonial Council for modifying the present conditions imposed by the State on companies working in the Katanga. The interested companies will, it is stated, enjoy an absolute liberty to fix their amortizations and the amount of their reserve funds. The rent to be reserved to the State will be calculated on the amount of profits distributed on the capital invested. The participation of the State will be progressive according to the revenue. As a basis of the new progressive scale, it is proposed to fix a rate of from 10 per cent. to 12 per cent. At first sight this rate appears to be somewhat high, but it is favourable as compared with the share of 33 per cent. in the profits which is reserved to the State under existing conventions.

* * * *

The board of the Charter Trust Company has recommended the payment of a dividend, less tax, for the half-year ended November 30 at the rate of 2½ per cent. on the Ordinary stock, making with the interim dividend already paid 5 per cent. for the year (as against 7½ per cent.), the appropriating of £10,000 to writing down cost of investments, leaving £6,663 to be carried forward, against £7,606 carried forward last year. A year ago £10,000 was placed to dividend reserve account.

* * * *

The recent rise in the price of "Jumbo" shares is explained by the news contained in the following cablegram, which was dispatched to the London office of the Jumbo G.M. Co. in mail week:—"Reef cut south crosscut. No. 4 level main incline shows good ore. Will telegraph later assays width this strike. It is important, but nothing can be said of value, or if permanent, until considerable development has been done." The report of the company, for the three months ended December 31 last, shows that there were crushed 9,700 tons for a yield of 3,050 ozs., or 6·288 dwts. per ton treated. The profit amounted to £1,247.

* * * *

The following shows the developments in the Globe and Phoenix mine during the month of January, 1914:—13th level drive north from winze bottom (12th level, No. 1 winze) has advanced 16 ft.; average width of reef, 19 ins.; average value over 30 ins., 26 dwts. 13th level drive south from winze bottom (12th level No. 1 winze) has advanced 18 ft.; average width of reef, 19 ins.; average value over 30 ins., 1 dwt. 14th level drive north from main shaft, prospecting has advanced 92 ft. 15th level drive south on east portion footwall reef, prospecting beyond fault, has advanced 31 ft. 15th level drive south on east portion, footwall reef has advanced 43 ft.; average width of reef, 6 ins.; average value over 30 ins., 41 dwts. 19th level E.P. No. 3a winze, has advanced 31 ft.; average width of reef, 47 ins.; average value, 144 dwts. Copy of cable sent:—"3a winze north 19th level, reef being too wide to carry in winze we have followed hanging wall section and connected with 20th level. On 20th level reef in three sections, footwall section being that on which 20th level drive north from No. 2 winze has advanced. Middle section 16 ins., 20 dwts., hanging wall section recorded above. Probabilities are three sections will again combine north of winze." 20th level drive north from No. 2 winze has advanced 33 ft.; average width of reef, 12 ins.; average value over 30 ins., 90 dwts. 21st level drive south from No. 2 winze has advanced 11 ft.; average width of reef, 17 ins.; average value over 30 ins.; nil. 21st level drive north from No. 2 winze has advanced 56 ft.; average width of reef, 21 ins.; average value over 30 ins., 1 dwt. Vertical shaft: total depth, 1,769 ft. Crosscutting for the month, 90 ft.

* * * *

Mr. Lewis Thomas, Traffic Manager of the Beira and Mashonaland Railways, has returned to Bulawayo from the Kafue. Mr. Thomas's visit was in connection with the establishment of a stern-wheeler steamer service on the Kafue River. He proceeded two or three hundred miles up the river, and speaks in enthusiastic terms of the results of his observations of the country.

Star of Rhodesia.

The Manager reports progress on this subsidiary of the Rand-Nigel Gold Mining Co., Ltd., as follows:—Star—No. 3 Shaft, 1st level: East drive at 5ft., reef 24in., 8.3 dwts.; west drive at 15ft., reef 33in., 6.5 dwts. No. 4 Shaft: Depth 45ft., reef 18in., 11.5 dwts.; depth 50ft., reef 18in., 30.0 dwts.; depth 55ft., reef 18in., 32.0 dwts. No. 5 Shaft, 1st level: West drive at 40ft., reef 30in., 21.5 dwts. No. 1 East winze at 5ft., reef 24in., 11.0 dwts.; No. 1 East winze at 10ft., reef 24in., 22.0 dwts.

A special general meeting of the members and associates of the Institution of Mining and Metallurgy was held, by the courtesy of the Council, at the rooms of the Geological Society, Burlington House, London, W., on Thursday, February 19th, 1914, at 8 o'clock p.m. The following resolutions were moved by the President:—"(*a*) That the following clause be, and is hereby, substituted for the existing clause, Section 1, of the Constitution and By-laws of the Institution of Mining and Metallurgy:—'The Institution of Mining and Metallurgy was established for the advancement of the Science and practice of mining *in respect of minerals other than coal and of metallurgy in respect of metals other than iron*: and to afford a means for facilitating the acquisition and preservation of that knowledgs which pertains to the profession of a mining engineer and metallurgist.' (Note.—It is proposed that the words in italics shall be added to the existing definition of the objects of the Institution.) (b) That the following clauses be, and are hereby, substituted for the existing Clauses 1 and 6, Section 5, of the Constitution and By-laws:—'(1) The Council shall be elected from among the members of the Institution, and shall consist of not less than twenty-six nor more than thirty-six members, exclusive of past presidents, who shall be ex-officio members.' (Note.—It is proposed that the words *and corresponding members of Council* shall be deleted from the existing Clause 1.) (6) The members of Council other than the president, the vice-presidents, the past-presidents, and the treasurer, shall be elected annually by the members and associates of the Institution from the members thereof." (Note.—It is proposed that the words *the corresponding members* shall be deleted from the existing Clause 6.)

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S.W. TRANSVAAL DIAMOND OUTPUT IN JANUARY.

Details of an Improved Month—3,063 Carats Realize £12,348.

THE diamond output at 36 areas in the South-Western Transvaal for January has been returned as 3,063¾ carats, value £12,348 5s., as against 3,031⅛ carats value £10,961 13s. 6d. in December, and 3,514 carats value £12,444 1s. in November. The contributors to January's output were as follows:—

	Carats.	Value.		
Bloemhof	825¼	£3,150	10	0
Dievedraai	359	1,610	12	0
Kameelkuil	256½	1,200	10	0
London	301	1,130	5	0
Eastleigh	231	848	5	0
Avondster	134½	673	10	0
Panfontein	189	603	0	0
Cawood's Hope	66¼	480	2	6
Eerstebegin	96¾	361	3	6
Rondevlei & Doornbult	88¼	319	10	0
Koppiesvlei	123¾	282	12	6
Rietput	61¾	228	0	0
Christiana	45	220	15	0
Diamantdoorns	36	205	0	0
Kareepan 164	59	186	0	0
Vaalpoort	21	110	0	0
Kromellenboog	16¼	96	5	0
Zwartlaagte	15½	95	15	0
Modderkraal	18	92	10	0
Grootpoort	12	85	5	0
Maroetjesfontein	27¾	74	15	0
Mamusa	7¼	66	10	0
Goedgenoeg	12¼	65	0	0
Biesjeslaagte	13¾	54	15	0
Schweizer-Reneke	12¼	52	5	0
Olivenfontein	2¾	14	10	0
Grootdoorns	2¼	9	0	0
Mooifontein	4	8	7	6
Vuurfontein	2	7	0	0
Jala Jala	18¾	6	12	0
Vliegekraal	1¾	3	10	0
Van Zyl's Drift	1¼	2	15	0
Weltevreden	¾	2	0	0
Naauwpoort	¾	1	10	0
Leeuwboschfontein	½	0	5	0
	3,063¾	£12,348	5	0

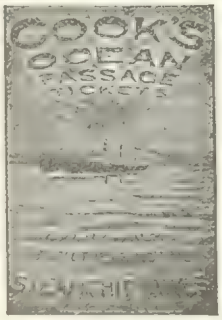
SOME DIGGINGS' DETAILS.

Bloemhof showed 180 returns, the highest being £275, £255, £141 and £115, and there was one stone of 12½ carats worth £115. Dievedraai made 52 returns, including those of £194, £143, £124, £120, £110, £109 and £102; while among London's 27 returns there were three of £113, £111 and £106 respectively. Eastleigh was responsible for 21 returns, the best being £469 and £123; and Avondster, with 19 returns, showed one of £215 and another of £168, a diamond of 10 carats value £105 being among the finds. Panfontein made 30 returns; and at Cawood's Hope (which reported 12 carats value £110 in February last and 13 carats value £40 2s. 6d. in December) now accounts for 66¼ carats value £480 2s. 6d., composed of 10 returns. Of the 41 areas reporting finds in December 10 dropped out of the list in January (viz., Johannesrust, Vechtvallei, Zoutpansdrift, Klipplaat, Kuilfontein, Zevenfontein, Matlabansstad, Zoetfontein, Wolmaransstad town lands, and Kareepan 137); while five areas make a re-appearance among the producers, viz., Grootpoort, Olivenfontein, Grootdoorns, Vliegekraal and Naauwpoort.

Defunct Companies.

In accordance with the Companies Act, 1909, the names of the undermentioned companies have been struck off the register of companies registered in the Transvaal, and are dissolved.

Name of Company.	Date of Registration
American Dry Alluvial Gold Mining Co., Ltd.	24/4/1891
A. A. Syndicate, Ltd.	2/11/1891
A. Syndikaat, Beperkt	6/4/1892
Alpha Syndicate, Ltd.	30/3/1893
Albert Buildings Co., Ltd.	25/4/1893
Adamant Syndicate, Ltd.	15/10/1895
American Importing and Trading Co., Ltd.	29/7/1896
American Medical and Chemical Co., Ltd.	30/9/1896
Apex Consolidated Coal Syndicate, Ltd.	18/7/1902
Herpsfontein Coronation Syndicate, Ltd.	30/12/1902
Hebron Diamond Mining Syndicate, Ltd.	27/10/1903
Koh-i-nor Diamond Prospecting Syndicate, Ltd.	1/2/1904
New Randfontein Reefs, Ltd.	22/12/1904
Germiston Co-operative Dairy Co., Ltd.	11/4/1905
Fairlight Syndicate, Ltd.	11/9/1906
Messina Copper Extension, Ltd.	31/10/1906
Cosmos Diamond Syndicate, Ltd.	6/11/1906
Alex Options, Ltd.	8/12/1906
Premier Copper Exploration Syndicate, Ltd.	16/3/1907
Bonanza Copper Developing Syndicate, Ltd.	2/4/1907
The Tokoza Diamond Syndicate, Ltd.	13 4/1907
The African Mines Corporation, Ltd.	29/6/1907
Macoutsie River Valley Corporation, Ltd.	17/2/1909
The Anglo-African Trust, Ltd.	25/2/1909
Mosses and Guthrie, Ltd.	24/4/1909
The Metals Extraction Co., Ltd.	23/2/1910
Alhambra Theatre and Winter Gardens, Ltd.	28/7/1910
Germiston Liquidation Stores, Ltd.	31/3/1911
The African Industries, Ltd.	25/8/1911
Premier Enterprises, Ltd.	14/4/1912
Zenith Tin Mines, Ltd.	29/10/1912



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RAND MINE MANAGERS AND MINE PROBLEMS.

Critical and Historical Retrospect of Outgoing President—Labour Troubles and Tendencies in the Past Year.

Speaking at the annual meeting of the Association of Mine Managers of the Transvaal, held in the Chamber of Mines last week, Mr. A. E. Payne, of the Consolidated Langlaagte, the retiring president, in moving the adoption of the report of the Council and of the accounts for the year, called attention to the very busy year that the Council had had to meet. The attendance at the ordinary monthly meeting of members had been more satisfactory than for some years, which might be an indication that the nature of the business transacted had been of more interest to members and that the work of the association had been well up to one of the objects of its existence namely, "to promote the general advancement of mining, to protect the interests of mine companies represented by members, and for the mutual assistance of members." It was a matter for regret that the total membership of the association showed a decrease over the previous year. This was partly to be accounted for by the closing down of mines which had ceased to be worked at a profit, and partly to the fact that some large amalgamation had reduced the number of representative members on the association. It was a matter of great satisfaction to the association that it had been able to add another name to the list of hon. members in the person of Mr. C. H. Spencer, who had twice served in the office of president, and for more than ten years was actively associated with the work of the Council. Mr. Spencer had now retired from the active management of mines; but it was felt that the association retained the benefit of his experience and advice should occasion arise.

REGULATIONS RE-DRAFTED.

Throughout the year, proceeded Mr. Payne, the Council was concerned in the re-drafting of the Mines, Works and Machinery Regulations, which came into force in final form in October last. It will be within your memory that the body of Regulations as promulgated under the Act 12 of 1911, contained certain innovations which the Government Mining Engineer agreed in a sense be considered as provisional and on their trial. In the meantime the Miners' Phthisis Prevention Committee was at work, and recommending that certain principles for the stamping out of miners' phthisis should be laid down in Regulation form. Your association has been privileged to co-operate in both the creation of new regulations under the Miners' Phthisis Committee, and in the revision of the main body of regulations under the Act of 1911. The work of your association in this matter was done under the presidency of the Chamber of Mines, and with the help of representatives of the consulting engineers. Once again it has been pointed out to the Government that the Mining Regulations are confusing in respect of the individual responsibility involved, are cumbersome, overlapping and too numerous to attain their main object in the carrying out efficiently of mining operations with due regard to the safety and health of employees.

A DESIRABLE BODY.

So frequently now is your association involved in the revision and patching up of these regulations that it occurred to your Council that steps should be taken to create some permanent body whose duty it would be to revise the existing regulations, to rearrange them and to receive, consider and draft the new rules or amendments. To add further to the use of such a body it was thought that some judicial power might be allocated to it, under which the penalties on employees inflicted by Inspectors of Mines and managers would fall for review; a body whose evidence of inquiry into accidents would be available for Magistrate's Courts, and to whom appeals might be made from decisions of the officials of the Mines Department. Such a body could be representative of all parties concerned in these regulations, and would improve on the present practice, whereby the Government Mining Engineer, with much tact and courtesy, defers first to one party then to another, and finally forces a draft into the printer's hands which reflects the best idea of a compromise he can come to. Following on the suggestion of your association in past years, the Mines Department has been good enough to refer many difficulties in administration to your association before circularising managers individually, and the results have, I hope, proved satisfactory to both parties. In a like manner the dealings of this association with the Native Affairs Department have been greatly assisted by the willing co-operation of the director in referring to Council many points of concern in the welfare and control of natives, before formal instructions to the inspectors of that department have been promulgated. This spirit of co-operation has made it very easy for your association to approach both Mines and Native Affairs Departments in matters of difficulty which have arisen during the course of the year.

NATIVE AFFAIRS.

As in the matter of the Mining Regulations, so with the Native Affairs Department. I think I am voicing the views of members when I say that there is room for some reorganisation. In close association as we are with the great recruiting corporations, namely, the Witwatersrand Native Labour Corporation; protected by the medical officers of the several Municipalities, and in close touch with the Police, we feel that the work of the inspectors of Native Affairs Department is largely unnecessary to the welfare of the industry. I make this observation in all good faith so that the Director of the Native Affairs Department might save the State some expense by further co-operation with the officials of these corporations and still retain his control as father of the natives and administrator of the comprehensive Act which calls him into being. (Native Labour Regulation Act and Regulations 1911.) I do not propose to touch on the progress of the mining industry during the past year, because any statistics brought forward for comparison with previous years will of necessity be affected by the industrial unrest [illegible] in the recent strike of January of this year. It will, however, be of interest to you to reflect on the possible causes of this unrest from the point of view of the mine manager. To get a clear and concise view of our relations with our employees it is necessary to cast one's mind back to our first friction with the miners in 1967. It will be common knowledge to you that the prime cause of that trouble was the attempt to make the machine stoper look after more than two machines at one time. For some time previous to that period it had been felt that the steady increase in the native labour force, following the years of the War, was introducing a larger and larger field of native labour to the manual work of mining. Though the duration of any one particular native's training may not have been prolonged, more and more natives were getting an insight into mining work. As this state fo affairs developed, it became evident to many progressive mine managers that the work of the white miner was more and more that of a mine surveyor in proportion as his native labourer became more familiar with their tasks. It required, in consequence, very little arithmetic to prove that, though one white man to one machine would produce the best results in area stoped per machine, one man to two or more machines would produce the cheaper cost of a ton of ore mined, when that man had good native assistance to run the machines.

MERELY A SUPERVISOR.

The proof that the white man's position was merely that of a supervisor was the actual work done during the strike of 1907, in which the natives and Chinamen ran the machines to all appearances just as well without the white men. Miners are notoriously slow to appreciate any such delicate change in relation to their work, so that it may be said that it took them some years to enable them to voice their grievances at the apparent amount of extra work thrust on them, when the extra machines were given to them to supervise. In the evidence before the Mining Regulations Committee, which took from 1907 to 1910 to report, one finds evidence of grievances of long hours, incorrect measurement, incorrect payments, etc., all bearing on the fact that the man was not himself doing the work, but through the assistance of others, and on the energies of whom to a large extent he reaped his reward. Unfortunately his grievances were by this time immensely complicated by the real danger and disastrous effects of miners' phthisis. When a miner becomes possessed of one real grievance every other complaint becomes as real and looms as large to him.

BOUND BY WORDS.

Some of these grievances were met by the adoption of some of the recommendations of the Krause Commission in regulation form to govern by written contract the relations with the employer, and, in my opinion, this action was very much to the detriment of the mutual understanding and in many cases cordial relations, which existed between manager and men. It may sound heresy to our legal adviser, but where either party becomes bound down to words, cordial relations very often suffer. To understand the intricacies of contract by written agreement, an agreement which permits of no ready alterations, a manager will, as a consequence, tend to engage a class of shift boss and mine overseer to assist him other than the more practical man whose knowledge was simply of ground and how to break it. I don't wish to imply that this was the sole reason for the advent of the more technically-educated mine official, but, in my opinion, it was one reason why the former stamp of man, whose relations with his men were more personal than technical, ceased to be universally employed. Following up the ideas of this Commission further, the mining industry felt that good results would follow on the adoption of some uniform system of agreement since there must be a written agreement under which men could be engaged on contract work.

UNSATISFACTORY CONDITIONS.

By the time this matter came up for final consideration (1911), the industry was feeling acutely the fluctuation in employees underground, pointing to unsatisfactory conditions somewhere, and it realised that this should be stopped if possible. It would take too long to draw up a list of all the possible causes of these changes of men from mine to mine, but it will suffice to say that large individual earnings, followed by greatly reduced earnings of the same individual on any given mine, were a prime cause of [illegible]. Your association very early entered the field and tried to stop this—first by introducing a form of contract which would tend [illegible] fluctuations in individual earnings, and, secondly, by adopting a system of discharge records which, by virtue of their continuity, would tend to steady a man up before he could decide to pack up and try another mine. Unfortunately, the particular form of contract known as the "guaranteed day's pay plus contract" system was not universally adopted, because at the same time that the changes among contractors from mine to mine were going on the wastage due to miners' phthisis was very acute; good men became scarce, and some managers openly attracted the best men by the possibility of large individual earnings.

FIXING A UNIFORM RATE.

In addition to the attempt to adopt a universal form of agreement, an attempt was made to fix a uniform rate for the guaranteed wage for the different classes of work. You are aware that this agreement formed the subject-matter for inquiry of a Conciliation Board appointed by the Government, and in retaining the adoption of a universal form of agreement managers were largely influenced by the existence of the Mining Regulations governing the matter. Whether the actual wage guaranteed should be a high one or a low one depends on the point of view. To minimise large fluctuations in individual earnings, the higher the wage the better; to adopt, on the other hand, a wage lower than that which has been accepted for years as the standard wage for different classes of work is to invite a conflict with the standard of living which each class of labourer has attained to at that standard wage. To sum up, therefore, I am of opinion that the causes of unrest among our miners were due to the advancing skill of the native, and the opportunity which we took to avail ourselves of it; secondly, the attitude of the Legislature in imposing regulations to break down by rigid agreements the mutual goodwill which has existed between us and our employees; and, finally, running all through these troubles, which I might call "working" troubles, was the real hardship of miners' phthisis.

HOW TO AVOID TROUBLE.

The question is: How can we better this position that we have arrived at to-day, and avoid trouble in the future? Gentlemen, when you elected me as your president I was not aware that you chose me on my qualification for statesmanship. It would indeed be a lucky prophecy if I could lay down a procedure which would carry us to a happy millennium. But I think I am at liberty to draw some deductions from the past experience, and I hope it may lead to some good in the future. Let us not be too hasty by our individual actions to introduce reforms, however justified by change of events or sound economy. Let us try to work as an association in matters so important; consult and defer to our peers. By such action I firmly believe we shall retain the proper position of being consulted as an association by other bodies connected with the mining industry. Our tongues are apt to wag when we are engaged on any deliberation of importance, and the dignity and utility of our association would be better assured if we awaited the result of our debate before discussing it elsewhere In my opinion, the members of this association are the only ones who can deal with employees on the mines. We appoint the men and we discharge them. The mutual relations must be moulded by us. We may not always see as far ahead as our directorates in the policy of the field, but we do know the material which works it. We see to-day, as the result of our recent trouble, a very crestfallen class of white employee and a largely emancipated native labourer. The latter has gone ahead by leaps and bounds in the past few months, enlightened in many respects on unsound lines by his white confrere. It is not much to our credit that we have allowed such an unsound influence to prevail among our natives. Facts must be accepted. however, and to improve the position, I believe, we must guide the emancipation of the native on the right lines. We must permit that equal opportunity between the black and the white which has so long been barred in our industry.

THE FUTURE.

At first sight one might think that such a policy means that our white employee must suffer for his white conduct in quarrelling with us. But it means nothing of the sort. It means that if he will not work as a manual labourer, he must take up his position as a skilled overseer. All we want is to make him realise that if he does not care to hold this latter position at a reasonable wage, then he must drop out of our scale of operations, for our manual work will in future be done by the coloured man. Now, gentlemen, whether in the transition period, in which we allow the emancipation of the native and train the white overseer, we shall have need to recognise unions of white men is a matter which is difficult to decide. Trade unionism is a useful factor in collective bargaining. But the forces of trade unionism have become seriously disrupted. On the one hand we have evidence of implicit obedience in the policy of the leaders, as in our own trouble, where the opinion of a small minority reflected the wishes of the leaders and yet bound the majority to action. On the other hand, we have instances, as in Europe, where the experience and wisdom of the leaders is ignored by the men concerned. Wt see the employer calling out that the men must obey their leaders and yet complaining that the leaders do not reflect the opinion of their followers. It seems to me that the remedy for our future lies in the recognition of unions, provided that such bodies are made to suffer in their pockets when the rules for bargaining are ignored and broken by industrial upheavals. Our position as managers is that we must educate our employees up to their responsible actions. We are not liable to suffer directly in our own pockets; but we do stand for the shareholder, who does suffer, and we must make clear to men that if they do not play the game in industrial life there will be loss to both sides, in which they personally, or their collective funds, must help to pay the penalty. In this way we can help towards industrial peace, which is so very far from universal at the present time; we can strengthen the position of our own industry, and can advance the welfare of this country, in which so many of us have had difficulties to encounter, which compare well with the troubles of other people. there is no need to give up hope that we as a young country cannot help to improve the world. May I call your attention to the philosophy in the words of the poet Schiller—

> Die Welt wird alt und wird wieder jung,
> Doch der Mensch hofft immer Verbesserung,

which practically means that "Hope springs eternal in the human breast."

The President then moved the adoption of the report and accounts.

Mr. H. Ross Skinner seconded, and thanked Mr. Payne for his most interesting address and for his work during the year. The president had not had an easy year in which to hold the reins of office, and he had to drive the coach along a very rough road; but he had reached the end of the journey, and he (Mr. Skinner) thought he would be able to hand it over to his successor for smoother running.

Mr. Palmer Carter (Robinson Gold Mine) was elected president of the association for the ensuing year. Mr. Roberts (Knight Central) was elected vice-president.

The retiring President said that before vacating the chair he would like to thank Mr. Ross Skinner for his kind remarks. It would have been impossible, he thought, to carry on the work without the very able assistance of Mr. Jago, the association's secretary.

Mr. Palmer Carter, in thanking the association for electing him to the position of president, said that he thought they would agree with him that it should be one of the most important associations connected with the mining industry. After all, they were the ones who had to get the results. Others might theorise and give them advice, but the mine manager had to put the theories into practice. He thanked them for the honour done him in electing him to the position of president of their association.

A ballot was taken for the election of members of the Council, and the following were elected: Messrs. C. B. Brodigan, J. R. Thom, P. Cazalet, F. J. Trump, R. C. Warriner, K. Sartorius, J. E. Healey, C. B. Saner, C. R. Davis, J. J. Wessels and Glynn.

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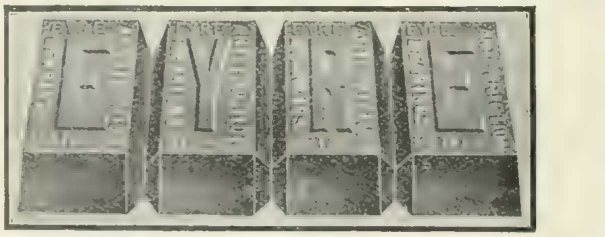

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MINING AND PROSPECTING IN THE CAPE.

Summary of Prospectors' Activities in a Large Area.

From the annual reports of the Magistrates of the several districts for 1912, we take the following:—In Knysna the gold-dredging company had closed down, the gold recovered from the sands not warranting further operations. The Magistrate was afraid that this would be the death-knell to the Millwood goldfields. A little prospecting work was in progress at the Bendigo mine and a few alluvial diggers were still working at Poverty Flats and Millwood Creek, but their returns were not encouraging. In Prince Albert the only other goldfield in the Cape Province was also reported to have ceased work, the company having disposed of its claims. No gold was registered during the year. The coalfields of the Molteno had produced about 26,000 tons during the year under review. About 16 Europeans and 300 natives had been employed. Prospecting for diamonds was commenced by one individual, but no successful results had so far been reported. In Wodehouse the Indwe coal occurred. The Dugmore coal mine was reported to be in full working order and employed, besides 60 European males and 350 native males, some 60 native females. Over 46,000 tons of coal had been produced. In the Burghersdorp district one solitary individual had for many months been prospecting for elusive gold. In Albany the Magistrate reported that platinum shares, once boomed, were no longer quoted. The Magistrate of East London reported that one prospector had during three months prospected for gold. In Carnarvon, besides prospecting for diamonds, boring for oil had been conducted by the North-West Prospecting Syndicate and was still proceeding. The Magistrate of Barkly West repeated his warning as to the demoralisation caused by the alluvial diamond diggings. He seriously urged any person who contemplated trying his luck on the river diggings to reconsider the matter. His advice to each and all was to stay away entirely from the diggings if there was the least chance of eking out an existence elsewhere, but, if forced to go to the Barkly West Digings, to leave again at the earliest opportunity. The demoralising life on the river would wound and warp the morals of anyone who was unfortunate enough to come within its pale except possibly a very few. His best advice therefore was "don't." In Herbert there were extensive alluvial diamond diggings, which in some cases yielded a fair profit and a class of stone far superior to any taken out of the Kimberley Mines. Several new diggings had been proclaimed during the year. In Kuruman at the Mahara Muthla alluvial diamond diggings over 600 carats of diamonds were registered as having been found. A surplus of underground water had prevented the poorer man working on these diggings. One prospector had also exhibited at the Magistrate's office an assay certificate as to payable gold occurring in the district. He had not, however, further proved his find. Asbestos mining on a small scale was still being proceeded with, but the prices paid for this mineral were so small that mining it did not pay. In Wynberg prospecting for tin was stated to be continuing, but with little success. In Barkly East two companies conducted prospecting operations for petroleum, but they had apparently abandoned further search. In Britstown a good coal seam was reported to have been discovered, but nothing further had been heard of it. In Cathcart prospecting for copper on the farm Turn Stream was still continuing. In Gordonia prospecting for precious stones and minerals had taken place. In the Hay district the only mining carried on had been for asbestos at Koegas. There were some five or six other asbestos mines in the district, but they had been closed down temporarily owing to the difficulty of obtaining transport to the nearest railhead. Two licences had also been issued to prospect for precious stones. In Hopetown some prospecting for diamonds had taken place, but no finds had been registered. In Kingwilliamstown the alleged discovery of alluvial gold referred to last year had ended in disappointment. In Mafeking at the gold reef diggings at Madibi no work had been done during the year, most of the claims having been forfeited. A little prospecting had been carried on at Kraaipan on the Setlagoli native reserve and one prospector claimed to have discovered a deposit of steatite. A sample was submitted for analysis, but the report received was that the quality was poor. In Port Nolloth copper occurred very widely. At present, however, the export was confined to the mines belonging to the Cape Copper Company and the Namaqualand Copper Company. Other base metals also occurred and during the year 21 base metal licences were issued in respect of copper, tantallite, corundum and mica. In Prieska two prospecting claims for diamonds were pegged off in the bed of the Orange River. There was no result and they were abandoned. An asbestos mine was being worked on the Prieska public outspan. This showed fair results. In Riversdale a syndicate was formed to develop a coal mine about 18 miles from the village. Development was proceeding and the reports indicated success. In Namaqualand corundum had been found near Steinkopf and mining on a small scale had been commenced. Three licences had been issued for precious minerals and 76 for base metals. The total output of copper ore for the year at O'okiep, Nababeep, Norap and Concordia had been over 118,000 tons. The mines had given employment to about 170 Europeans and over 1,300 coloured persons. The Cape Copper Company had resorted to retrenchment during the year. In Stellenbosch prospecting for tin had continued, but without much practical result. Tin mining was still being carried on at Kuils River. In Taungs an area on the Kaap Plateau was pegged off for the purpose of working the lime there during the year, but no operations had up to the time of writing the report been actually commenced. In Victoria West one licence to prospect for precious stones had been issued, but without result. In Vryburg prospectors had been busy, but no finds had been registered. In Walfish Bay prospecting for precious stones and minerals had been prohibited. One lease for base metals had been granted, but no work done.

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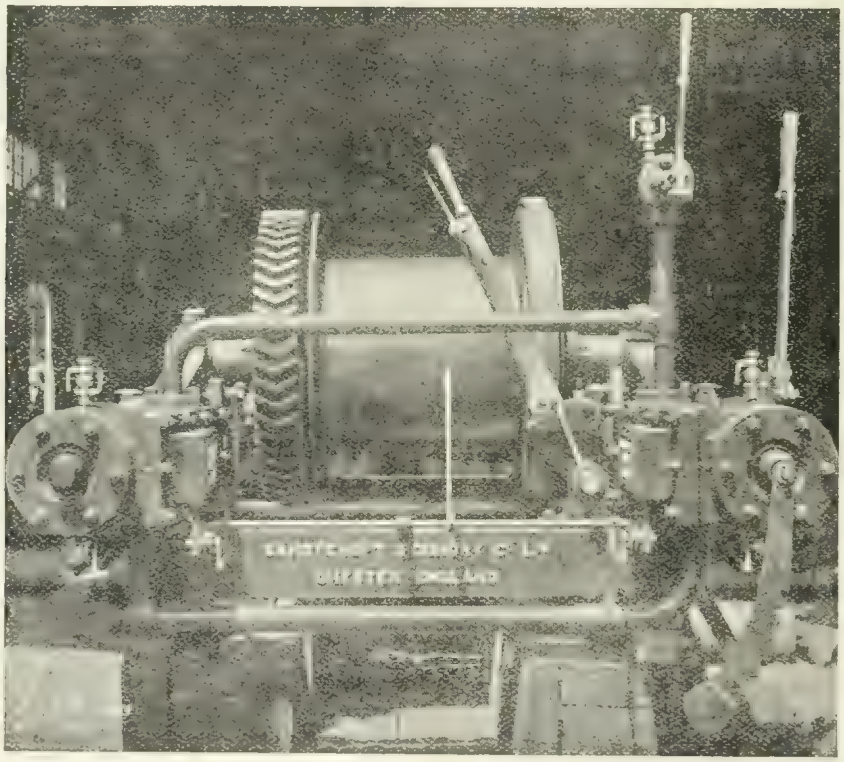

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Engineering Notes and News.

SAFETY AND ELECTRIC BLASTING ON THE RAND.

At Saturday night's meeting of the Chemical, Metallurgical and Mining Society, Mr. J. Chilton spoke on the recent paper on "Electric Blasting." He said: The authors of this treatise deserve commendation for their timely and interesting paper, and, though the subject is not new, the urge given by it in the direction of industrial safety will tend to make every mining man their debtor. Electric blasting was first practised as far back as the year 1851, when Dumas was sinking through heavily-watered strata at Veyras, Ardeche, France, and since that time the method has slowly spread over the mining world. After suffering from neglect for years, the system is regaining its rightful position in the forefront of mining methods. In many of the American mines, troubled with dangerous gases, it has been installed, and men are hoisted to the surface, so that if an explosion does occur at blasting time, all the men are safe, firing taking place from the bank. In the North of England the practice is rapidly extending, though as yet the portable battery is mainly used, and shots are fired singly. The English Commission on Accidents in Mines, 1886, reporting, "consider that firing by electricity should receive the serious attention of mine managers. The new German Mining Regulations promulgated in 1912 are based on the belief that the system of firing by electricity is safer than that of ignition by ordinary safety fuse, and in certain mines of the Dortmund district electric shot firing has been made compulsory.

THE PRIMARY OBJECT.

The primary object of the system is to ensure the health and safety of the underground workers, and if by it dust and fumes and the other dangers of the mine can be avoided, surely the method merits a trial in the mines of the Transvaal. The condition of some of our mines after blasting operations can only be described as deadly. The Miners' Phthisis Prevention Committee in their report tell us that in place of the three milligrams which should be considered the standard allowable, the air of some of our mines suddenly becomes charged with as much as 286 milligrams, and sometimes even rises to 540 milligrams of dust to the cubic metre of air. It is little use looking for any diminution of our industrial scourge while miners are asked to remain in such an atmosphere even for a few minutes per day. Drawing men at downcast shafts will tend to lessen the evil, but this cannot be done in many cases; water blasts, sprays and sprinklers help to lay a large amount of dust, but they are powerless to eliminate entirely the dust in the air immediately after blasting. Until some device is invented that will entirely do away with the dust, the better way is to get the miners to the surface before firing starts. This aspect of our conditions has not been overlooked by our industrial captains, and in most well-managed mines not more than eight per cent. of the workers are underground at lighting-up time. Yet this number is compelled to breathe the dust-laden atmosphere, and as long as the present system remains no substantial reduction of our industrial plague can be expected. Under the system described by the authors, the necessity of exposure to dust and fumes is avoided, and though the method may not be applicable to every mine, yet its extension to single-shift mines is desirable and reasonable, and could be made without any great sacrifice of efficiency. The question of cost will have no place in the counsels of the industry if it can be shown that the electric-firing method will sensibly reduce our phthisis bill.

PRESENT SYSTEM CONDEMNED.

Our present system of blasting must stand condemned by all thoughtful students of our mining conditions. Surely it is possible to find some method less costly in life and health than the present one. In looking over the painful pages of the State Mining Engineer's Report for 1912, one is startled at the tribute that was paid in that year for our present method of breaking ground. Through the courtesy of the Mines Department the following data was supplied. In 1912 in the Union of South Africa no less than 21.3 per cent. of the fatal accidents in mines was due to our present method of preparing charges and using explosives.

Analysis according to causes in the Union of South Africa:—

	Accidents.	Deaths.	Injuries.
Drilling into unexploded holes	137	130	193
During blasting operations ...	61	31	37
Due to fumes ...	24	36	2
Sundry and unknown ...	17	4	19
Whilst charging	12	7	12
Handling detonators	30	2	29
	281	210	292

On the Witwatersrand gold mines 10.6 of all accidents were caused by explosives, and analysis showing the following.

	Accidents.	Deaths.	Injuries.
Whilst charging	12	7	12
Drilling into unexploded holes	126	120	176
During blasting operations	43	22	27
Due to fumes	23	35	2
Sundry and unknown	12	1	14
Handling detonators	23	0	23
	239	188	254

WASTE OF LIFE.

In a word, our present methods of dealing with explosives in charging and blasting operations cost the Witwatersrand gold mines no less than 188 lives, and caused serious injury to 254 persons, in the year 1912. While such a price in life and limb is being paid, he will be a bold man who will defend a system that means such a waste of life; and the point it is desired to make clear is this: that with electric blasting a marked reduction in these accidents would

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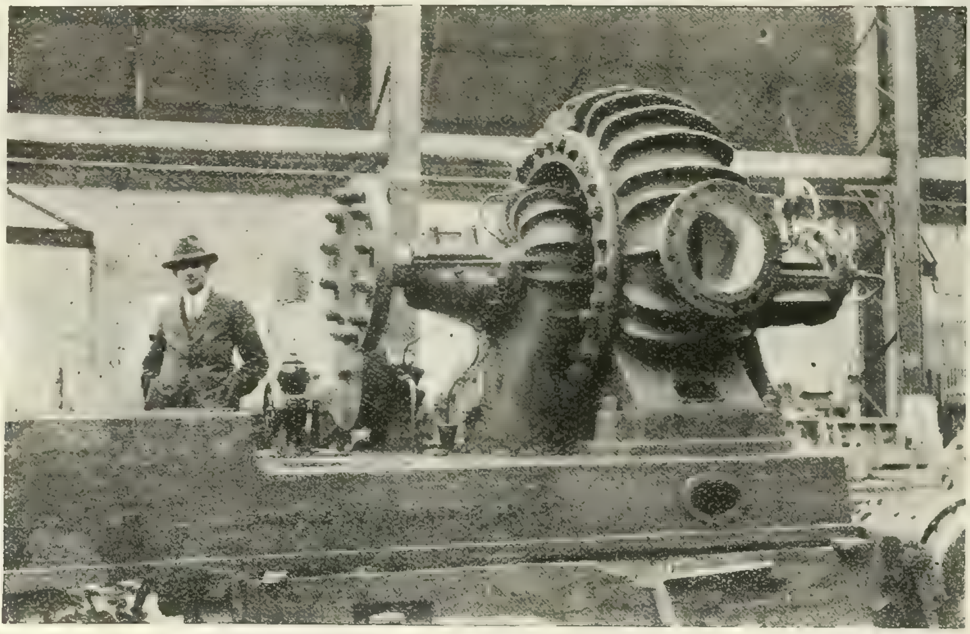

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occur, and some items would be entirely swept away. The introduction of electric shot-firing will undoubtedly lead to the introduction of specialism in underground work. The rock-driller of the near future will be a driller of holes, purely and simply, and need know little of blasting and explosives. The breaking of rock will be in the hands of a few carefully chosen miners on each mine, who will commence to load up the holes after the drilling shift is done. The rush and hurry of the present system will be abolished, and accidents whilst charging up will be sensibly reduced. It is contended by some mining men that the suggested system will increase the number of misfires, and therefore the accidents due to drilling into exploded holes. The authors of the paper make no extravagant claims concerning this matter, and admit 0.592 per cent. of misfires at the Meyer and Charlton G.M., where electric blasting is in force, but this percentage is far below that of safety fuse. Careful observations carried over four months with the best brands of safety fuse give a percentage of 7.46 misfires. With greater practice in electric blasting, the number of misfires should be reduced, as 0.529 per cent. is very high compared with the best European practice, for Mr. J. Belfitt in his paper on "Detonators" read before the Association of Colliery Managers states that out of 43,161 shots fired in two and a half years he had only three misfires ("Coal and Iron Trades' Review," August 26th, 1904). Perhaps the greatest critic of electric firing is C. Dobbelstein, who, writing in "Gluckhauf," January, 1913, contends that electric firing is not safer than fuse firing, but admits that many of the electric firing accidents are due to faulty detonators, bad firing apparatus, and the ignorance of the average miner. Probably no system of ignition can be invented that will be absolutely fool-proof, but electric blasting seems to point the way to a reduction of blasting accidents due to drilling into misfired holes.

IN THE DANGER ZONE.

In 1912, 43 accidents and 22 deaths occurred on the Witwatersrand due to blasting operations. These were mainly due to persons entering the zone of blasting operations deliberately or owing to entrances not being safeguarded, hiding away and sleeping in stopes, and holing through without proper warning. As all persons will be out of the mine before blasting starts under the suggested method, this item would be entirely eliminated. Many of the deaths due to fumes are caused by the burning of explosives through faulty safety fuses, and by persons being compelled to pass through fumes on their way to the shaft after blasting. As these causes would cease to operate with electric ignition, deaths due to fumes would be reduced. Accidents due to running fuses would become a thing of the past under the electric system. The Chief Inspector of Explosives, in his report for 1910 concerning safety fuses, says that "safety fuse does not run." Without questioning the good faith of this statement, one may doubt its accuracy. Accidents recorded as "premature explosions" convey to the mind of the mining man the idea of a running fuse. Lighting-up accidents numbered nine, with six deaths and four injuries. With firing by electricity, both running-fuse and lighting-up accidents would be entirely swept away. Electric blasting will no doubt have its own peculiar dangers, and the effect of exploding a large number of holes simultaneously would be disastrous in some of our older mines; but the introduction of delay-action fuses would avoid this. The accidental closing of the electrical circuit is seemingly impossible with the safeguards of the Meyer and Charlton system, and, looking at the system generally, it seems likely that electricity will do for the safety of the mine what it has done for the safety of the sea.

ROCK-BREAKING STANDPOINT.

From a rock-breaking point of view, electric firing would not make an appreciable difference except in the blasting of cuts, where real simultaneity would be achieved. The question of cut and round firing can safely be left to the miner, who would soon adapt himself to the altered conditions. By a system of four hole-cuts instead of the usual three, he can increase his chances of successful blasting by 50 per cent. In double drives and shafts, double cuts could be used with delay-action fuses for the six holes. It is encouraging to note the interest that this paper has aroused in mining circles, and to note that safety and health problems are receiving their due share of attention, even in times of industrial unrest and distraction.

THE WORK OF CRUSHING.

[By Arthur F. Taggart.][*]

A general awakening of interest among mill men concerning the mechanical efficiencies of their crushing machines is evident from a perusal of the recent files of mining publications. Considering the large part of the power bill which must be debited to the crushing department, such interest is natural. When, however, the articles on the subject are read, the only statement upon which the writers agree is that fine grinding consumes a large amount of power, and that the machine which, from a concentration standpoint, offends as a slime producer is, for that reason, a serious offender in wasting power. When the mill man attempts to find a method for measuring the power wasted, or to compare the efficiency of one machine with that of another for the same work, he is confronted with a choice of methods which lead to conflicting results. There are two reasons why the work of crushing is not more generally understood. In the first place, experimental data are difficult to obtain; and in the second place, before these data can be put in general form certain assumptions must be made. A difference in these assumptions by different investigators has led to conflicting conclusions. This conflict has resulted in the proposal of two laws. The first of these is the so-called Rittinger's law, which is variously stated as follows:—"The work of crushing is proportional to the reduction in diameter." (R. H. Richards: "Ore Dressing," p. 304, 1903.) "The work required to crush rock is very nearly proportional to the reciprocals of the diameters crushed to." (A. Del Mar: *Engineering and Mining Journal*, vol. xciv., No. 24, p. 1129, Dec. 14, 1912.) "The work done in crushing is proportional to the surface exposed by the operation, or better expressed for this purpose, the work done on a given mass of rock is proportional to the reciprocal of the diameter of the final product, assuming that all the mass has been reduced to one exact size, which is only theoretically possible." (A. O. Gates: *Engineering and Mining Journal*, vol. xcv., No. 21, p. 1039, May 24, 1913.) Of this law as variously stated above H. Stadler says: (Grading Analyses and Their Application, Author's Reply to Discussion, *Transaction of the Institution of Mining and Metallurgy*, vol. xx., p. 426, 1910-11.) ". . . many mining engineers still have blind faith in an old blunder which, under the name of Rittinger's law, has been thoughtlessly reprinted and carried on in edition after edition of mining books since the days of the 'Dark Ages' (1850). This 'law' is a myth which has never been recognised by science, and it is unfair to Rittinger's memory to connect his name with what is clearly nonsense, the currency of which, in the mining world, is due either to misunderstanding or the error of a translator. All that Rittinger himself really said on the laws of crushing, in has famous book on ore-dressing, fills barely two out of about 600 pages, and in these two pages he says clearly: '*the increase of the surfaces exposed is directly proportional to the force required for reducing.*' (These words are also in the original text printed in italics.) As Rittinger goes on to say: 'and therefore also to the work absorbed in effecting the separations,' it may certainly be taken for granted that he supposed the force acting in the fracture planes themselves. Now, this may be conceivable for chemical, electrical, thermal actions and reactions, but not for external forces as applied in mechanical crushing. . . . Had Rittinger stated that the increase of surface is proportional both to 'force' and to 'work done,' he would have been guilty of mistaking 'force' and 'work done' as identical. Rittinger's law, therefore, simply states the proportion of the increase of surface to the *force* required in crushing and not also to the *energy* absorbed, which, in conformity with Kick's law, varies as the volumes." Kick's law is stated as follows:—"The energy required for producing analogous changes of configuration of geometrically similar bodies of equal technological state varies as the volumes or weights of these bodies." (H. Stadler: Grading Analyses and Their Application, *Transactions of the Institution of Mining and Metallurgy*, vol. xix., p. 478, 1910-11.) The writer has made a careful analysis of the proofs of the previously quoted authors and has come to the conclusion that the work of crushing is proportional to the volumes of the particles crushed, acording to Kick's law, and not to the new area produced, as stated in Rittinger's "law." The reasons for this conclusion follow. Kick's law is unquestionably correct for all substances where the changes of configuration are within the elastic limit. For perfectly elastic substances the statement holds true to final rupture, and for substances almost perfectly elastic, such as rock, the law is a very close approximation of the fact. The behaviour of structural materials under stress has been widely investigated. The accompanying phenomena are well understood and the laws controlling them are universally accepted. Briefly stated, these laws are: Within the elastic limit of any substance the force required to produce a given deformation is directly proportional to the area of the transverse section. The amount of deformation within the elastic limit is directly proportional to the length of the specimen and to the force applied. The work done in producing a given deformation is the product of the average force by the distance through which it acts. These laws apply both in tension and in compression.

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[*] Instructor in Mining Engineering, Hammond Laboratory, Sheffield Scientific School, Yale University.—Excerpt from paper read before American Institute of Mining Engineers.

The Economics of Air Power in Mines.

During the discussion on the paper on rock drill air consumption read before the South African Institute of Engineers, by Messrs. E. G. Izod and E. J. Laschinger, some interesting particulars as to the wasteful manner in which compressed air is used in some mines were given by Mr. P. H. Steele. He pointed out that the number of mines that purchase their compressed air requirements were in a minority at present, but that on such mines every unit of air that could be saved represented a cash saving of the total cost of that unit. This was not so on mines which ran their own compressing plants, whether steam or electrically driven. Some time ago he had to investigate the conditions under which some air pumps were running in an isolated section of one of the mines, which was equipped with steam-driven air compressors. He found that the cost of compressed air power for running these pumps amounted to about £95 per month, while the cost of electrical power to do the same work would not be more than £10. On this particular mine the standing charges against compressors was very high, over 50 per cent. of the total cost of running them, so that by substituting electric for air power he could not show a cash saving of more than about £30 per month. This was an exceptional case, but it served to illustrate his point. In steam-driven compressors the saving would be in coal, water, and possibly a little lubricant. The proportion that these items bore to the total running cost varied with the load factor, being high when the load factor was high and *vice versa*. Whenever a substantial saving of air was effected which resulted in a reduction of the revolutions of the compressor, the load factor, referred to full load, was reduced, and the cost per unit of the air delivered was increased. If the standing charges amounted to 30 per cent. of the total running cost at any load and the output was reduced by 25 per cent., the cost of the reduced output per unit would be increased by about 10 per cent. Electrically-driven compressors were very wasteful of power when running at less than full load. He knew, he said, of one electrically-driven compressor which took 55 per cent. of the full load power to deliver 31 per cent. of its full load output, so that the cost for power per unit of air delivered at this light load was almost double the cost at full load.

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BARTLE & Co., Ltd., Johannesburg; E. W. TARRY & CO., Ltd., Kimberley.

Finance, Commerce, and Industries.

German Trade with South Africa.

The official statistics published by the Department of Commerce and Industries of the Union are, of course, subject to qualification as regards South African exports to other countries, owing to the re-exportation of certain commodities shipped in the first instance to England, and treated for official purposes as if intended for British markets. The German Consular Agency at Johannesburg issued a statement last year showing the consequent divergencies between the South African figures and those published from German official sources in regard to South African exports to Germany, and a similar statement with reference to the figures for 1912 has just been circulated among the more important Chambers of Commerce throughout the Union. In this connection, the German Consular Attache, Mr. Renner, writes:—"Having just received the German statistics of the import and export trade to the German Empire for 1912, I have, as last year, compared the data given concerning the German trade with South Africa with the official statistics published by the Department of Commerce and Industries of the Union of South Africa. The figures agree fairly well with regard to German exports to South Africa, but the same is not the case as regards South African products exported to Germany. The South African statistics give a total of this item of £1,719,067, whereas the German figures total £4,404,600, thus showing a difference of £2,685,533. The greatest differences are shown in wool (£1,053,436), ostrich feathers (£346,046), bark (£90,860), and maize (£80,676). As I have already pointed out previously, such differences are unavoidable, because a lot of South African produce is shipped in the first instance to the British markets, and only subsequently finds it way to the Continent, and because the shipments made with the condition of optional port of discharge are for statistical purposes always declared as being destined for Great Britain." Accompanying this communication is a table showing the South African exports to Germany for the period named.

* * * *

The Whaling Industry.

The Magistrate of Malmesbury, in his annual report for 1912, reported that there were two whale fisheries at Saldanha Bay, which had captured over 400 whales during the year, and, with a capital of £50,000 invested in a company, had produced over £31,000 of oil and £4,000 worth of fertilisers. It was further reported that a third factory, which was to be floated, was to commence in Saldanha Bay, and that the three crayfish factories along the coast were meeting with success. In Walvis Bay the Walvis Bay Whaling Company had commenced to erect a large whale oil factory. In June the steamship Pentaur, of the Durban Whaling Company, took up a position in the bay as a floating whale oil factory. Between the two of them these companies caught 527 whales and shipped £41,250 value of oil. Their aggregate capital was £88,000. In addition to the manufacture of oil, the Walvis Bay factory manufactured a quantity of guano from whale bones and offal. The Magistrate of Mossel Bay reported that one whaling company was carrying on operations there. About one-tenth of the shares were held locally, and the balance in Norway. During the year the company had three whaling steamers working, and caught 180 whales, as compared with 125 in 1911, when they only had two whalers, and did not operate for the whole season. The manager of the company said that whales were plentiful, but that they were very shy and difficult to approach, and that they were very poor in condition as compared with last year. Probably the number of companies now operating along the coast was responsible for this. Of whale oil, 4,635 casks had been shipped, 451 tons of fertiliser, and 25 tons of whalebone. A site had been granted by Parliament for a new factory some ten miles away, but no move had been made at the time of writing in the matter of erecting plant. The whaling industry had increased rapidly in recent years. The capital now invested at Durban involved a sum of no less than £266,990, while the profits made by the various companies had in most instances been substantial. Eighteen vessels were engaged in whaling last year, an increase of nine on the previous year. Seven hundred and twenty-five persons were employed, of whom 265 were Europeans. A total of 1,006 whales was captured during the year, a slight decrease as compared with the catch of the previous year. The total of the value of the whales captured was estimated at upwards of £99,678. The number of whales captured since 1908 from Durban was as follows: 1908, 106; 1909, 155; 1910, 532; 1911, 1,061; 1912, 1,006. These had produced during 1912, 6,452 tons of oil, 1,730 tons of fertiliser, and 1,186 tons of whale meat.

* * * *

A Paper-Making Industry for S.A.

The Pretoria Civic Association has an Industries Committee, and acting on the advice of that committee the Association recently decided to send home some samples of raw material obtainable in the locality with the idea of finding out if it was possible to start a paper making industry in Pretoria. A reply has now been received from the firm of Bertrams, Limited, of Edinburgh, in regard to a plant to deal with the raw material found in this district. The report states, inter alia: "With regard to the samples of raw material you sent us, the wild grass is very much superior to the maize stalks and leaves, and unless the maize can be got at a very much lower cost than the grass, we would recommend you to adhere to the grass, as it is material capable of making high quality papers if required. We understand, however, that it is your intention to manufacture coarser papers such as brown paper for wrapping purposes and the like, and we have no hesitation whatever in saying that the grass is excellent material for this purpose." Samples of pulp from the grass and from the maize stalks have been sent out by the firm, which considers that the sample made from grass treated with caustic soda is the best. From this high-class papers could be made. The firm gives details of a plant which it is certain would give every satisfaction, and states: "We are therefore putting before you a scheme which will produce the paper you require at very much less cost than has hitherto been possible, and the saving to you therefore will be considerable. . . . You will therefore be able to produce paper at a cost which represents great saving over existing methods, and we think therefore that the fairest method of dealing with you in a matter of this kind is that you would pay a royalty for every ton of paper produced. To fix this royalty we think it would be absolutely fair to fix at one-half of the saving that would be made with this process as against any other process you can adopt." Further the report states: "We are quite prepared to take the whole of the responsibility in connection with the treatment of the raw material, and are quite willing to give you any assurance in connection with this."

South-West Africa.

According to information published by the *Deutsch-Südwest-Afrikanische Zeitung*, in the stanniferous Neineis district, where of late a number of tin properties have entered the producing stage, some gold finds, among them several nuggets the size of a walnut, have of late been made, to which locally great importance is attached. A number of claims originally pegged off for tin recovery have already been converted into gold claims and are worked as such. So far the information lacks official confirmation.

THE WEEK IN THE SHAREMARKET.

Firmer Tendency Towards the End on London Buying—Paris Purchases Diamond Shares.

After a quiet week, a firmer tendency is apparent towards the end, caused by buying from London. Paris is said to be supporting diamonds, doubtless on the good news from American and other markets for the stones. The native labour supply on the mines is improving daily, and there is a confident feeling that in the next six months costs can be substantially reduced. The report presented by Surgeon-General Gorgas is said to point to the possibility of considerable economies under the head of native sanitation, and the increasing adoption of small hammer drills, combined with the more careful handling of native labour, is also a " bull " factor. On the whole, though little business is being done, and there are the usual fluctuations, the tendency of the market is upward, and the outlook promising. A gradual improvement in business and a steady appreciation in prices during the coming months can safely be anticipated.

* * * *

	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.	Wed., 25th.	Thurs., 26th.
Adair Ushers	—		0 3*	0 4*	0 4*	0 4*
African Farms...	14 9	14 9*	14 9	14 6*	14 6*	14 3*
Aurora Wests	—	-	9 9*	9 6*	9 6*	12 0†
Apex Mines	18 0	18 0*	18 0*	18 6*	18 0*	18 0*
Bantjes Consolidated	14 0*	14 6*	15 0†	14 0*	14 6*	14 0*
Benoni Consolidated	1 9*	1 10*	1 10*	1 10*	1 10*	1 10*
Brakpan Mines	51 6*		-	52 6*	52 6*	
Breyten Collieries	28 0*	29 0*	29 0*	29 0*	29 6*	29 0*
British South Africa... ...					19 6*	--
Bushveld Tins	0 6*		0 7*	0 9	0 7*	0 6*
Cassel Coals	—	13 0*	—	13 0*	13 0*	—
Cinderella Cons.	—	—	—	7 0†	6 0†	--
City and Suburbans	42 6*	42 6*	42 6*	43 0*	43 0*	42 6*
City Deeps	59 6*	61 0*	60 0*	60 0*	60 6*	60 0*
Cloverfield Mines	4 9	4 11	4 9*	4 9*	4 9*	4 6*
Clydesdale Collieries	9 0*	9 0*	9 0*	9 0*	9 6*	9 6*
Concrete Constructions	—	-	—		2 6†	1 0*
Cons. Investments	—	20 0*	—	20 6*	20 6*	-
Cons. Langlaagtes	—	29 6*	—	29 3*	29 6*	29 3*
Cons. Main Reefs	17 9	17 6*	17 6	17 0*	17 6*	17 0*
Coronation Collieries	—	—	21 0*	21 0*	21 0*	21 0*
Coronation Freeholds	0 4*	—	0 5*	0 5*	0 6†	0 4*
Coronation Syndicates	—	3 0*	3 0*	3 0*	—	—
Crown Diamonds	8 9*	8 6*	8 6*	8 6*	8 6*	8 3*
Doornhoek Tins	—	3 0†	—	—	—	—
Durban Rood. Deeps	20 0†				—	-
East Rand Centrals	2 7*	2 8	2 6*	2 6*	2 6*	2 3*
East Rand Coals	1 8	1 8*	1 9	1 8*	1 8*	1 8*
East Rand Deeps	1 6*	1 6*	1 8*	1 6*	1 8*	1 6*
East Rand Props	38 9*	39 0*	40 0	40 0*	41 0*	40 0*
East Rand Debentures ...	£85*	£85*	£85*	£85*	£85*	£85*
Eastern Gold Mines ...	1 4*	1 3*	1 3*	1 3*	1 3	1 3*
Ferreira Deeps...	45 0*	—	—	—	—	45 0*
Frank Smith Diamonds ...	5 3*	5 4	5 4*	5 6*	6 3	5 9*
Geduld Props. ...	25 3	25 0	24 6*	24 6*	25 0*	24 9*
Geldenhuis Deeps	—	—	23 0*	23 0*	23 0*	23 0*
Glencoe (Natal) Collieries	- -	6 3*	6 6*	7 3†	6 7*	6 6*
Government Areas	19 9	20 6	20 0	19 9	20 0	19 6*
Jhb. Board of Executors...		—	26 3†	26 3†	26 0†	25 0†
Johannesburg Estates	3 0*	3 0*	3 0*	3 0*	3 0*	3 0*
Jumpers	3 6†	—	-		-	
Jupiters	—	-	5 6†	—	—	-
Kaalfontein Diamonds ...	0 6†	0 4*	0 6†	0 6†	0 6†	
Kleinfontein Estates	—	25 0†	—	-	15 0†	22 6*
Klerksdorp Props.	2 3	2 4*	2 4*	2 5*	2 5*	2 4*
Knight Centrals	10 3	10 6	10 1*	9 10	10 1*	9 11
Knights Deeps		—			33 0*	31 0*
Lace Props.	3 6	3 6*	3 6*	3 6*	3 6*	3 6
Langlaagte Estates	--	16 0*		-	19 0*	—
Luipaardsvlei Estates	9 0*	9 0*	9 6*	10 0†	9 6	9 6*
Lydenburg Farms	2 9*	2 9*	2 9*	—	2 9*	2 8*
Main Reef Wests	8 6*	8 6	8 6*	8 6*	8 6*	8 6*
Main Reef West Debs. ...		£70*			£70*	
Middlevlei Estates	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Modderfontein B.		84 0		82 0*	—	82 0*
Modderfontein Deeps	44 0	44 3*	43 6	43 3	43 3	41 9
Natal Navigation Colls. ...	15 0*	15 0*	—	15 0*	15 0*	15 0*
New Eland Diamonds	27 0*	27 0*	27 6*	27 0*	27 0*	27 0*
New Era Cons.	6 0*	6 6*				6 0*
New Geduld Deeps	2 0	1 10*	1 10*	1 10*	1 10*	1 10*
New Kleinfonteins	23 6*	24 6*	24 6	24 6*	24 3*	24 3*
New Modderfonteins	—	—	-	240 0*	242 6*	-
New Rietfonteins	—	2 6*	2 6*	2 6	-	—

*Buyers. †Sellers.

	Fri., 20th.	Sat., 21st.	Mon., 23rd.	Tues., 24th.	Wed., 25th.	Thurs., 26th.
New Unifieds	16 0†	16 0†	16 0†	—	—	—
Nigels	17 0†	—	—	—	—	—
Orange Diamonds	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
Piggs Peaks	9 6	9 6*	9 6*	9 6*	9 6*	—
Pretoria Cements	45 9*	45 6*	45 6*	46 0*	45 6*	45 6†
Princess Estates	—	—	—	4 9*	-	4 6*
Rand Klips...	2 3*	2 6	2 3*	2 6*	2 6	2 3*
Rand Nucleus	1 6*	2 0†	1 6*	1 9*	1 9*	1 10
Randfontein Deeps ...	3 9	—	—	—	3 9*	3 10*
Randfontein Estates	24 6†	24 6†	—	23 0*	23 0*	—
Roberts Victors	—	—	28 6†	—	20 0*	20 0*
Robinson Deeps	31 0†	—	29 0*	31 0†	31 0†	—
Rooiberg Minerals...	27 0*	27 0	27 0	26 6*	26 0*	25 6*
Ryan Nigels	3 0*	3 3*	3 0*	3 0*	3 0*	3 0*
Shebas	5 0*	5 0*	5 0*	5 0*	5 0*	5 0*
Simmer Deeps...	—	1 6*	2 6*	2 6†	2 3†	1 6*
S.A. Breweries	—	—	—	—	39 0*	—
S.A. Diamonds...	30 0*	30 0*	30 0*	—	30 0*	30 0*
S.A. Lands	3 1*	3 3*	3 1*	3 1*	3 1*	3 0*
Springs Mines	13 6*	13 9*	13 6*	13 9*	13 10*	13 9*
Sub Nigels	10 9	11 3*	11 6*	11 6	11 6*	11 3*
Swaziland Tins	39 0*	—	—	—	—	—
Transvaal Coal Trust ...	—	34 0*	34 0*	34 0*	34 0*	34 0*
Transvaal G.M. Estates ...	—	48 0*	—	48 0*	—	47 0
Tudors	—	—	—	—	2 0†	2 0†
Van Dyks	—	1 3*	—	1 0*	1 3*	1 0*
Van Ryn Deeps	41 6	42 6	42 0	42 0	42 9	42 0
Village Deeps	36 0†	36 0†	34 0*	34 0*	—	35 0†
Vogelstruis Cons. Deeps	1 0*	1 0*	1 0*	0 10*	1 0*	1 0*
West Rand Cons. ...	7 0*	—	—	—	—	—
Witbank Collieries	47 0*	47 6*	48 0*	47 6*	48 0*	48 0*
Witwatersrands	67 6*	67 0*	65 0*	65 0*	66 0*	66 6*
Witwatersrand Deeps... ...	53 6	52 6*	53 0*	53 0*	54 0*	—
Witwatersrand Townships.	—	—	20 0	—	—	—
Wolhuters	13 0*	13 3*	14 0†	13 0*	13 6*	—
Zaaiplaats Tins	30 6	30 6*	30 6*	30 0*	30 0*	30 0*

*Buyers. †Sellers.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

March 13.—Worcester Exploration (annual).
March 16.—Robinson; Crown Mines (special).
March 18.—Anglo-French Coal Estates (annual).
March 20.—Apex; New Kleinfontein; Benoni Consolidated (special).
March 27.—Simmer Deep; Jupiter (annual); Wolhuter Gold Mines; Buck's Reef (annual).
March 31.—Cassel Coal Co. (annual).
May 20.—Apex Mines, New Kleinfontein (Annual).

Rose Deep.

The report of the directors of the Rose Deep, Ltd., for the three months ended December 31st shows that the total working expenditure was £149,228, the cost per ton milled 16s. 4d., and the value £1 4s. 11d. The credit balance of the appropriation account is £410,855. The number of feet driven, sunk and risen, exclusive of stopes, was 1,612. The ore received from the mine was 198,885 tons, and the tonnage crushed 182,500. The total yield was 54,109 ounces fine. The report contains the following general remarks :—Sinking at No. 1 shaft in connection with the conversion to two-stage winding is now completed, and the rise for the main ore bin started. Good progress is being made, and connection to the incline should take place at an early date. The new change-house at this shaft is completed and in use. Work has been resumed at No. 3 shaft. A small tonnage was drawn from this section of the mine, but as a certain amount of repair work is necessary, it may be a little while before the full tonnage will be obtainable. The ventilation at No. 4 shaft has been improved by a new connection, made during the quarter, in which a small fan has been installed. No sand filling was done, but arrangements are being made to fill the area west of No. 1 shaft, between the first and second levels, as soon as possible. The native labour force shows an improvement but is yet far short of its complement, and, whilst an improvement in tonnage may be expected, the force will have to be further supplemented before normay results generally may be looked for. The amount expended on capital account was £419, and it is estimated that a further sum of £2,933 will be required to complete work at present in hand.

Automobile Notes.

Motor Fuel from Sawdust.

We understand that the Forest Production Laboratories of the Bureau of Forests of the United States Department of Agriculture have been for some time investigating the possibilities of sawdust as a source of suitable fuel for internal combustion engines. That alcohol can be extracted from wood and hence from sawdust is, of course, well known, but it seems that the laboratory at Madison, Wisconsin, has carried the process much further than this, and is said to have succeeded in perfecting a process by which a spirit can be produced from the material which, unlike alcohol, as we know it, can be used without carburetter alterations in ordinary petrol motors. It is needless to say that if this story proves correct, it will bring into usefulness enormous quantities of a waste product and give us another fuel for our cars.

Police Control of Traffic at the Cape.

At the last committee meeting of the Royal Automobile Club of South Africa, a resolution was passed, of which the following is the text :—" That the Royal Automobile Club of South Africa is of opinion that the strengthening of the police force in the Cape Peninsula is an urgent necessity. That, in so far as the motoring community is concerned, the inadequacy of police supervision of traffic becomes more and more apparent every day, and is a theme of constant adverse criticism by visiting motorists. That the club learns with pleasure that in this year's estimates provision is made for a substantial increase in the number of police for this area, and that it trusts that the members of the House of Assembly for the Peninsula will do everything possible to ensure this item for the estimates being passed by the House. That a copy of this resolution be forwarded to members representing the Cape Peninsula, to Senators Graa, Powell and Schreiner, to the Town Council and to the Chief of Police."

Light Cars for the Colonies.

" The Autocar " has received the following letter from Mr. Jarrott, which contains a great deal of common-sense with regard to the type of car required in the uttermost parts of the earth :—" I have read with very great interest your excellent article in ' The Autocar " quoting a letter received from Philipstown, Cape Colony. As you will possibly remember, I had the pleasure of travelling over the roads of South Africa with Mr. S. F. Edge, and from what we ourselves saw and experienced, and from what we heard from other keen motorists up and down the country, we formed a fairly clear idea as to the sort of car that would suit colonial requirements. You are very right when you state that it cannot be produced for £200. In the firffst place I am inclined to disagree with your correspondent in regard to the engine size which he states is sufficient. I believe that a car for all-round use in the colonies must be powerful. The roads are in many places very bad and sandy, and soft river beds have to be negotiated; therefore I consider ample power is necessary. On the other hand, weight is not desirable, and therefore strong, light construction is necessary, with ample engine power, and a car of this description must be built of the very best materials. It was after realising these colonial needs that, on my return to England, I started on the design of a light car which would fill the bill, and it was as the result of what I learned on the spot in South Africa that the Foy-Steele car came into existence. In order to show how fully I have endeavoured to deal with the matter, I would like to burden you with one or two details which can be compared with the specification set out by your correspondent :—(1) The engine is 76 mm. x 127 mm., giving 25 h.p; (2) the chassis weighs 14½ cwt. ; (3) the wheel track is 50in. ; (4) road clearance is 10in., with wheels larger than usually fitted in England—810 x 90 (i.e., for cars of the smaller type) ; (5) one of the most important features on the car is the suspension, which is achieved by long specially reinforced single springs, which I have proved by experience give excellent results on very bad surfaces when they are not asked to carry an excessively heavy load ; (6) water circulation is by pump ; (7) the wheels are detachable and interchangeable ; (8) the car will travel at 35 miles an hour, which is asked for by your correspondent, quite comfortably, and when required, on a good road, will run at over 45 miles per hour ; (9) the carriage body is sufficiently large to take two people as big as yourself and myself in our winter overcoats quite comfortably without crowding, and there is ample room beneath the driving wheel for the 6ft. length which your correspondent mentions. Briefly, the car is specially built for the work it has to do on roads similar to those which we find in South Africa, and, judging from the reports I have had of the cars already sent over there, it does its work to perfection, but—the price is not £200. I have found that I cannot supply the car at a lower price than £280, fully equipped, with all the lamps, hood, screen, tools, jack, pump, etc., and even then the margin on trade orders is very small, and I am willing to see whether, having built a car particularly suitable for the job, it will receive sufficient support to make it a big success. From the results already achieved I think it will.—Yours, etc.,

" CHAS. JARROTT."

Repairs for Industrial Motors.

Mr. D. F. Smith, in a recent [illegible] the Association of Engineers-in-Charge, referred to the question of repairs. "In many cases," he said, "commercial [illegible] so far as repairs are concerned, the [illegible] a motor van as a sort of [illegible] need any [illegible] generally found in [illegible] the owner has his [illegible] probably no greater [illegible] man who has very probably [illegible] a motor van, and on the [illegible] pare it for any repairs [illegible] most impossible feats to be performed in doing work in a certain time, and expects very elaborate repairs to cost a few shillings only, having generally not the slightest mechanical [illegible] in a state of chronic di[illegible], liable to [illegible] time, simply because, instead of having been properly [illegible] from the first, only enough has been done at any time [illegible] ning. In a very short time the vehicle gets into such a state that no proper repair is possible; it would mean rebuilding the vehicle to do any good. On possibly no other [illegible] to be paid for so dearly as on an industrial motor [illegible] and skilled attention keeps a vehicle in good trim and [illegible] work. If this attention is withdrawn, even for a short time, it is almost impossible, except at ruinous cost, to catch the work up again." The lecturer recently inspected some heavy commercial chassis which had been neglected for less than a year, yet were almost beyond repair. The owners at one time had a contract for a quarterly overhaul, but deeming this unnecessary and too expensive—probably from the fact that the vehicles never went wrong while the contract was in force—decided to have a yearly overhaul instead. The cost of the first yearly overhaul was so staggering that for a long time permission to do the work was withheld, and was only given after two other [illegible] mates had been obtained. With [illegible] the lecturer considers that it is better for [illegible] by a good outside firm. A report from another firm carries a weight with the owners which one from their own engineer never seems to do. The owners, as well as their engineer, are [illegible]

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worry and responsibility, and although this course may appear to be much dearer than having the vehicles patched up at home, it is generally far chaper in the end. For instance, several firms of repairers make a practice of keeping a stock of the parts which give most trouble on their customers' vehicles, either finished or nearly so, so that when a vehicle comes in for repair the delay may be as short as possible. The work, also, is done better. The lecturer by this does not intend to reflect on the owner's engineers, who could doubtless do the work quite as well if allowed the necessary time and material. From careful observation of a huge number of vehicles, the author is able to state that the cost of repairs taken over five years is equal to 35 per cent. of the first cost of a petrol vehicle and 25 per cent. of that of a steam vehicle. This is quite apart from any question of tyres or repairs due to accident. In conclusion, the lecturer impressed upon everyone connected with motor vehicles to pay the greatest attention to the repairs. The success, or otherwise, of motor vehicles largely depends on how the repairs are carried out. Neglect of or slovenly repairing has to be paid for at a very high price, and more vehicles are scrapped or discarded through this than for any fault in manufacture or design. The method in which repairs are executed also has a very great effect on the upkeep cost and depreciation of these vehicles.

Preserving the Finish of a Car.

The following account of how to preserve the finish of a car, and a few hints on storage during the winter months, may be of use to those motorists who have no intention of using their cars until the better weather comes again. On many cars which have done a year's hard work revarnishing is generally desirable, and the best times to revarnish are the autumn and the spring. When a car is to be stored, attention must be given to the garage. A damp, cold garage, with bad ventilation and very little light, is the worst possible place for storage, and the worst possible combination for acting on the varnish and general finish that can be devised. As a rule, the importance of light upon the general finish of a car is not given its due. French chemists, of recent years, have reaffirmed the deductions of the earlier scientific men to the effect that light is the lifeblood of varnish. If the car be left in a very dark garage the result would be a permanent discolouration of the varnish, and instead of retaining its natural colour, the varnish would have an objectionable greenish hue; the only way to get rid of this is by revarnishing, and in many bad cases by repainting. Light not only preserves the varnish and the normal colour, but also assists in counteracting the fading tendencies of the paint under the varnish. By the foregoing, motorists will see that great care should be taken in selecting a place for storage, when a specially planned and built garage is not available. Any location adjacent to, or in the neighbourhood of, stables where horses are in occupation is not suitable, as the ammonia fumes also have a bad effect upon varnish.

Difficult Starting.

In spite of the great improvements in carburetters of recent years, it is probable (writes "Æolus" in the *Light Car*) that never has starting an engine for the first time on a cold winter's morning been so difficult as at the present time. The fault must be placed at the door of the heavy grades of petrol and benzole which are now being used, as these are by no means sufficiently volatile at low temperatures to give a satisfactory firing mixture. If the engine is of the high compression type and the driver a lady, she is in a position not to be envied, and the use of any form of "dope" or priming is excusable. For several years the writer, who is troubled with an engine which is a bad starter in cold weather, has employed a remedy which is perfectly simple and yet has proved to be a specific. It consists of an injection of half a dozen drops of ether by means of a compression cock soldered into the inlet pipe. The ether is the ordinary commercial product, obtainable at any chemist's, which most of us have sampled at some time or another in the dentist's chair. Its efficacy as a starter is accounted for by the fact that at a low temperature it is much more volatile than petrol, and the vapour produced is highly explosive and inflammable. It is rare indeed that the engine fails to fire at the second pull at the starting handle.

"Fixed" Firing.

A "fixed" firing point magneto does not enable the engine to develop its full power, and for the light car user who wishes to get the best results it is well worth while (says the *Light Car*) to have the magneto altered. The writer had a Bosch magneto of this kind converted from fixed to adjustable timing for the sum of 10s. by the Bosch people, and the results more than justified the outlay. Another improvement which can be effected to the magneto is to increase the strength of the magnets. The strength of the magnets depends on the amount of surface, and for this reason the larger magnetos have two or three layers of magnets, one on top of the other, whilst in other cases the magnets are very wide. In each case the surface is considerable, and by increasing the surface a weak magneto can be much improved. On most light cars the simplest type of magneto is used, having two, or at most three, small magnets side by side. These do not develop a powerful current at low speeds, and, if another layer of magnets can be arranged on top of the first, better results are obtained. We have heard of cases in which a very decided improvement has been effected in this way.

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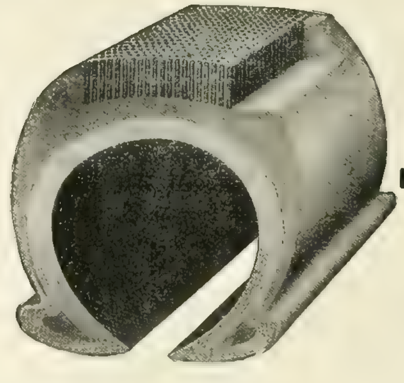

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Dundee Coal Co.

The annual general meeting of the Dundee Coal Company was held last week. The directors' fifteenth annual report had the following, *inter alia*:—The last balance sheet of the Dundee Coal Company was to 30th September, 1912, and that of the late St. George's Company to 31st December, 1912, therefore the accounts then presented covered a period for Burnside Mine of fifteen months, and for the St. George's Mine twelve month. In the future the accounts would, as usual, cover twelve months, from 1st January to 31st December of each year. At the extraordinary meeting of shareholders held on 29th April last, authority was given to increase the capital from £100,000 to £175,000. That had been done, and after paying 62,500 shares to the shareholders of the late St. George's Coal and Estate Co., Ltd., 21,500 shares were held in reserve. The amount of debentures issued was £83,075, no further allotments having been made during the period under review. The output from the campany's mines was 449,355, of which 289,467 tons were from Burnside, and 159,888 from St. George's. The average monthly increase at Burnside was 1,587 tons, as compared with the corresponding period in the previous financial year; St. George's, however, showed a shrinkage of 19,190 tons. In December, 2,675 tons 16 cwts. were despatched from No. 2 pit (Lower Burnside) and during January the tonnage from that pit should be about 5,000 tons. The excellent quality of the coal from those mines had again enabled the company's London agents to obtain many important bunker and export contracts for 1914, and the directors therefore anticipated no difficulty in disposing of the increased output the mines were capable of producing during the year. From the accounts it was to be seen that after paying £12,225 in dividends, providing £6,230 12s. 6d. for interest on debentures, and writing off £17,037 4s. 4d. for depreciation, an amount of £12,090 3s. 8d. is carried forward to next account. It was the intention of the directors to recommend a dividend of 5 per cent., amounting to £7,675 be paid out of that balance. During the period under review the amount on fixed deposit had been increased by £3,000.

Don'ts for Detonator Users.

The following instructions of the E. I. du Pont de Nemours Powder Company are published by *Coal Age*, October 11, 1913:-

(1) Don't forget the nature of blasting caps, but remember that with proper care they can be handled with comparative safety.

(2) Don't smoke while you are handling blasting caps, and always keep them away from lights.

(3) Don't shoot into blasting caps, whether electric or other, with a rifle or pistol.

(4) Don't handle or store blasting caps in or near a residence.

(5) Don't allow blasting caps to be stored where children or irresponsible persons can get at them. Keep them under lock and key.

(6) Don't store or transport blasting caps of any kind with high explosives.

(7) Don't keep blasting caps, electric or other, in a damp place.

(8) Don't carry them in your pocket.

(9) Don't tap or otherwise investigate them.

(10) Don't try to pull the wires from an electric blasting cap. The wires should not be jerked or roughly handled.

(11) Don't attempt to take blasting caps from the box by inserting a wire nail or other sharp instrument.

(12) Don't allow priming (the placing of a blasting cap in dynamite) to be done in a thawing house.

(13) Don't fasten the blasting cap to the fuse with the teeth or with a knife. Use a cap crimper made for that special purpose.

(14) Don't handle electric blasting caps during the immediate approach or progress of a thunderstorm.

(15) Don't attempt to use electric blasting caps with the regular insulation for extremely wet work. For that purpose use waterproof fuses.

(16) Don't use old broken leading or connecting wire for electric blasting caps. A new supply will not cost much and will pay for itself many times over.

A new type of electric igniters for blasting shots enables the operator to test, previously to connecting the ignition battery with the prepared shots, the electrical resistance of the signalling apparatus as well as the power of the current and the voltage of the current producer. The apparatus is described in detail by Mr. O. Dobbelstein, of Essen, in *Gluckhauf*, of January 24th. After most severe tests at the trial gallery it is stated to have proved satisfactory in practical work

Geldenhuis Deep.

The report of the directors of the Geldenhuis Deep, Ltd., for the three months ended December 31st, 1913, shows that the total working expenditure was £167,094, and the cost per ton milled £1 4s. 7d., the value being £1 8s. 3d. The working profit was £25,378, while profit on the treatment of accumulated slimes, £712, and net sundry revenue, £1,972, bring the total to £28,062. The total yield was 45.759 ounces fine. The report contains the following general remarks:—The development footage accomplished for the quarter was 6,510 feet, an increase compared with the previous period, despite the severe shortage of labour which prevailed. The mine is extremely short of natives, there having been a consistent efflux throughout the year, and to this is attributed the reduced results as compared with the previous three months. No. 3 shaft and No. 1 auxiliary shaft were sunk 85 feet and 63 feet respectively; the 18th level station was cut in the latter. Clearing operations were proceeded with in Nos. 2 and 4 shafts. All work in progress in the shafts received a setback in November owing to a storm of an exceptionally sharp nature having broken over the mine, an inrush of water and mud finding its way through the old outcrop workings of the Jumpers Gold Mining Company into the mine. There were 21,323 tons of sand deposited into the workings; filling was suspended for the first month of the quarter, and then resumed intermittently for the remaining period. The capital expenditure for the quarter shows a credit of £1,724 on account of machinery and plant sold. The balance authorised to be expended is now £157

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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Eighteenth Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room, Fourth Floor, National Bank Buildings, Simmonds Street, Johannesburg, **on Wednesday, the 20th day of May, 1914, at 12 o'clock noon.**

BUSINESS:

1. To receive and consider the Statements of Account and the Reports of the Directors and the Auditors for the Year ended 31st December, 1913.
2. To elect two Directors in place of Messrs. Wm. Dalrymple and G. W. Higgins, who retire in terms of the Company's Articles of Association, but who are eligible and offer themselves for re-election.
3. To appoint Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors, Messrs. F. W. Diamond and English, and C. L. Andersson and Co.
4. To transact all such other business as may, under the Articles of Association, be transacted at an Ordinary General Meeting.

The Transfer Register of the Company will be closed from the 18th day of May, 1914, to the 3rd day of June, 1914, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting, must produce their Share Warrants at the places and within the times mentioned below:—

(a) At the Head Office of the Company (3rd Floor), National Bank Buildings, Simmonds Street, Johannesburg, at least twenty-four hours before the time fixed for the Meeting.
(b) At the Offices of the Company, in London, 208-224, Salisbury House, Finsbury Circus, E.C., at least thirty days before the date fixed for the holding of the Meeting.
(c) At the Offices of the Paris Agents of the Company, Credit Mobilier Francais, 30-32, Rue Taitbout, Paris, at least thirty days before the date fixed for the holding of the Meeting.

By Order of the Board,
L. S. RAYMOND, Secretary.

Head Office: 3rd Floor, National Bank Buildings,
Simmonds Street, Johannesburg, 9th February, 1914. 19119

APEX MINES, LIMITED.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Seventeenth Ordinary General Meeting of Shareholders in the above-named Company will be held in the Board Room, Fourth Floor, National Bank Buildings, Simmonds Street, Johannesburg, **on Wednesday, the 20th day of May, 1914, at 11 a.m.**

BUSINESS:

1. To receive and consider the Statements of Account and the Reports of the Directors and the Auditors for the Year ended 31st December, 1913.
2. To elect two Directors in place of Messrs. W. J. Gau and Edw. H. Read, who retire in terms of the Company's Articles of Association, but who are eligible and offer themselves for re-election.
3. To appoint Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors, Messrs. F. W. Diamond and English and A. E. Page.
4. To transact all such other business as may, under the Articles of Association, be transacted at an Ordinary General Meeting.

The Transfer Register of the Company will be closed from the 18th day of May, 1914, to the 3rd day of June, 1914, both days inclusive.

By Order of the Board,
L. S. RAYMOND, Secretary.

Head Office: 3rd Floor, National Bank Buildings,
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